DENTAL

FEBRUARY 1944

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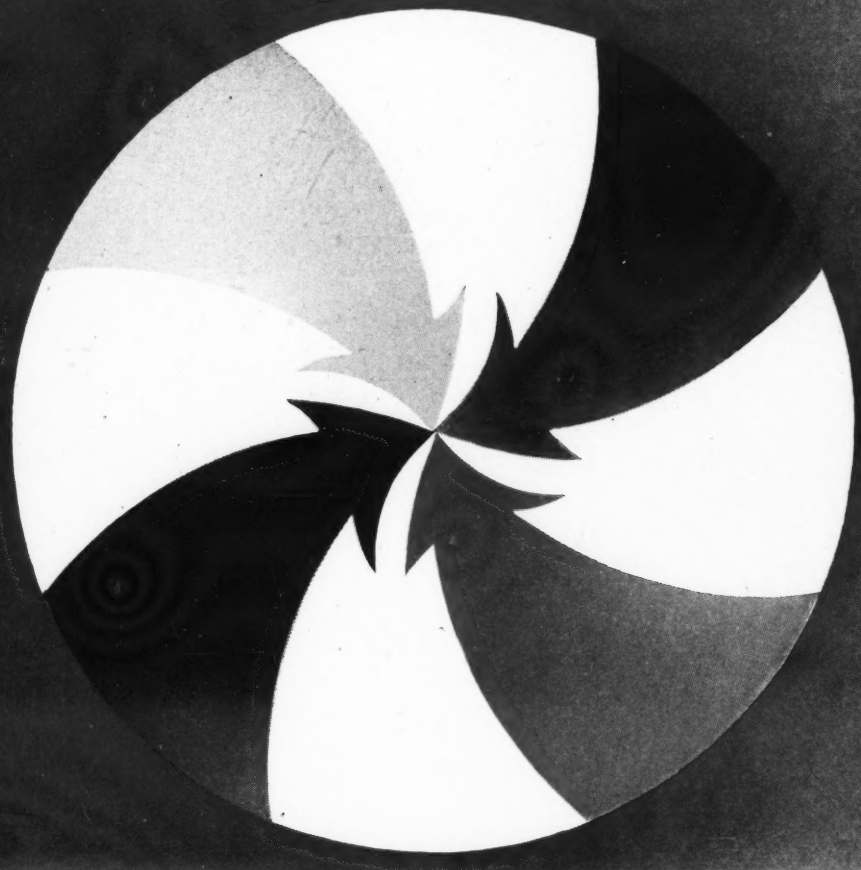

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THE DENTAL Digest

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February 1945

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Modern Amalgam Manipulation for the Dental Assistant

C. F. TUMA, D.D.S., Cleveland

The dental assistant can be trained quickly to proportion and mix silver alloy and mercury in accordance with the latest acceptable principles, and to deliver the mixed silver amalgam in a carrier ready for insertion in the cavity. Several valuable minutes of time can be saved if the assistant carries out this procedure. This saving of time repeated several times each day releases the dentist for other productive and remunerative services.

MANY INDIVIDUAL investigations, and the organized studies of the Research Commission of the American Dental Association with the Bureau of Standards, have resulted in constantly improved materials and methods of amalgam manipulation.[1,2] These are vital to the production of dense, durable, and dimensionally stable silver restorations which are capable of retaining a high polish.

Preventing Moisture Contamination

Special attention is devoted to simple methods for the prevention of moisture contamination, inasmuch as it is now known to induce delayed and continued expansion as well as pitting and corrosion of the surface. Many instances of severe pain have been traced definitely to the continuous expansion which results from the presence of moisture in the plastic silver amalgam. Moisture reacts with the zinc in the alloy, forming hydrogen gas which develops a tremendous internal pressure after the amalgam has set.[2] Amalgam should never, for this reason, be mulled in the bare palm of the hand, nor handled with moist fingers, nor placed in a wet cavity.[3,4] The rubber dam, properly placed, is the surest means of maintaining a dry cavity. Various means, such as rubber dam material, rubber palms, and rubber finger cots, have been recommended in the past to prevent moisture contamination of the amalgam by the hands.[4] Inexpensive and easily prepared cotton squeeze cloths, however, are clean, sanitary, and disposable after one usage, and provide a convenient means of preventing moisture contamination.

No attempt will be made here to describe accepted methods of packing the prepared silver amalgam in the cavity. This has been ably described by J. T. Sweeny[5] and others. In the technique which follows, the dental assistant will be directed to prepare the silver amalgam accurately and in an approved manner, and to deliver it to the dentist's hands.

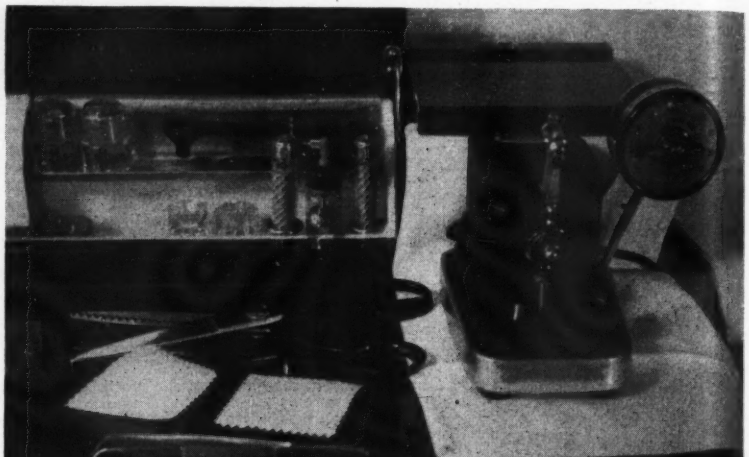

Fig. 1—Equipment: Mercury-alloy balance, electromechanical amalgamator with automatic timer, cotton squeeze cloths, pinking scissors, cotton pliers, and plunger-type amalgam carrier.

Equipment

The equipment necessary for the procedure, as follows, is shown in Figure 1:

1. Mercury - alloy proportioner. For accuracy, a scale or balance type proportioner with a dropper dispenser for mercury is preferred.

2. Electromechanical amalgamator with an automatic timer. An approved glass mortar and pestle and a watch or clock are also acceptable.[5]

3. Cotton squeeze cloths. These may be purchased ready to use, or may be prepared economically by cutting cloth (nurses' lawn is excellent) into 3-inch squares, to be used

[1]Schoonover, I. C., and Souder, Wilmer: Corrosion of Dental Alloys, J.A.D.A., **28**:1278-1291 (August) 1941.

[2]American Dental Association Research Commission: Excessive Expansion of Amalgam, J.A.D.A., **29**:167-328 (February) 1942.

[3]Phillips, R. W.; Boyd, D. D.; Healy, H. J.; and Crawford, W. H.: Clinical Observations on Amalgam vsical Properties, J.D.Research, **22**: 157 (June) 1943.

[4]Miller, E. C.: Personal communication to author (June) 1944.

[5]Sweeny, J. T.: Amalgam Manipulation—Manual versus Mechanical Aids, J.A.D.A., **27**:1940-1949 (December) 1940.

once and discarded. When cut with dressmaker's pinking scissors, the squares present a more finished appearance and do not ravel.

4. Cotton pliers.

5. Plunger-type amalgam carrier.

Technique

1. Prepare a squeeze cloth for use by creasing it lightly diagonally. This forms a trough-like fold which aids in preventing the plastic amalgam from rolling out of the cloth.

2. Weigh or proportion the required amounts of silver alloy filings and mercury (Fig. 2), and place them in the capsule of the amalgamator (Fig. 3), or in the mortar if amalgamation is to be done by hand. Directions for adjusting the balance of each brand of alloy are included with the instrument. If a large cavity is to be filled, the dentist may request that the silver amalgam be prepared in two or more installments. No more silver amalgam should be prepared at one time than can be used within three minutes after it has been mixed. Succeeding portions may be weighed and placed in extra capsules of the amalgamator, or in an extra mortar or dappen dish, ready for instant mixing.

3. Portions requiring less than four or five drops of mercury are difficult to handle. The capsule, or the mortar and pestle, must be clean and free from hardened particles of silver amalgam which may cause corrosion of the finished restoration.[1] The black bakelite capsules are freed of remnants of previous mixes more easily than are the stainless steel capsules.

a) Only seven to twelve seconds are required to combine the silver filings with the mercury properly in the electromechanical amalgamator. *Do not undermix or overmix.* The plastic amalgam should be smooth, but should not stick excessively to the capsule walls. The latter may result from overamalgamation and is distinctly harmful. Undermixing results in a granular, poorly combined mass which may corrode excessively. Follow the instructions which come with the instrument.

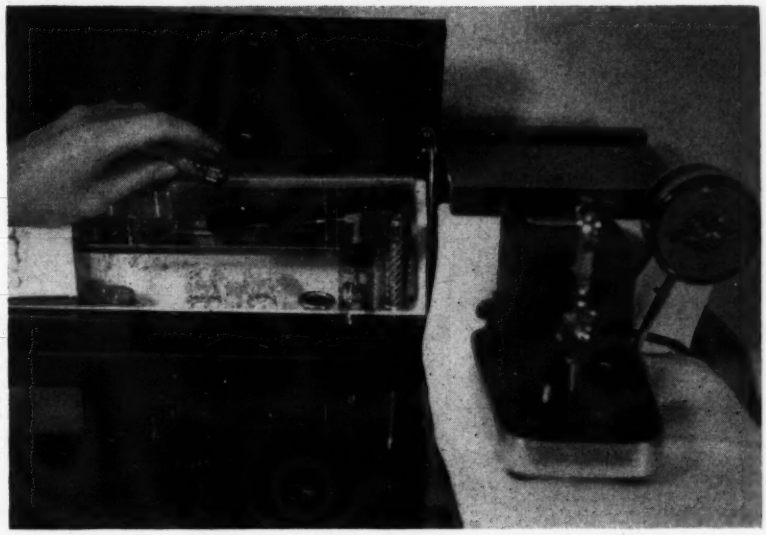

Fig. 2—Proportion the alloy filings and the mercury. Tap the alloy dispenser with the index finger to facilitate a free flow of the alloy filings from the dispenser.

When the mix is completed, open the capsule, spill the contents onto a squeeze cloth, lay aside the miniature pestle, and place the plastic silver amalgam back into the capsule, using cotton pliers to prevent contact with the fingers. If the silver amalgam is mixed again for about one second, it will roll out of the capsule and onto the squeeze cloth as one round ball.

b) If the hand mortar and pestle are used, follow the manufacturer's instructions closely. The standard procedure generally calls for light pressures of not over 3 to 4 pounds on the pestle, which should rotate 125 to 150 turns per minute for one minute to one and one-half minutes. At the end of that time the mixed silver amalgam should appear smooth and homogeneous.

The silver alloy filings and the mercury are *not* to be ground together, but should be mixed lightly. Hold the pestle as you would hold a pen or pencil. If the mortar has a raised center, it should be held at about a 45-degree angle from the horizontal (Fig. 4). It will be found that the dry silver alloy filings will tend to collect with the mercury in the lower level

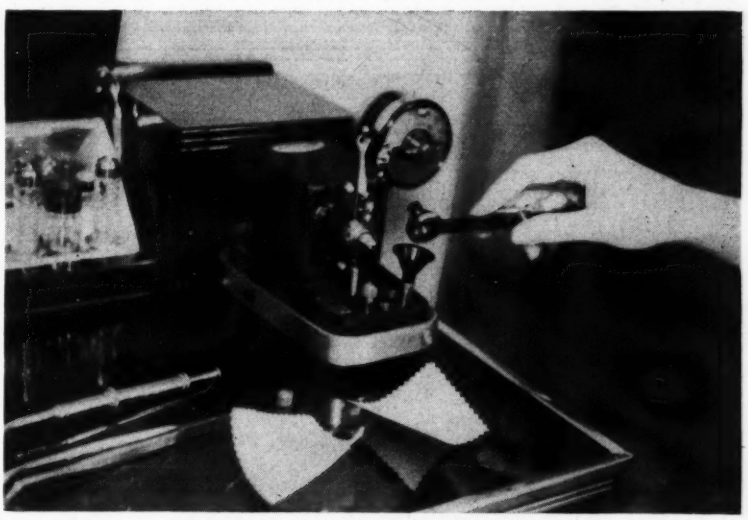

Fig. 3—Place the alloy filings and mercury in the capsule of the amalgamator.

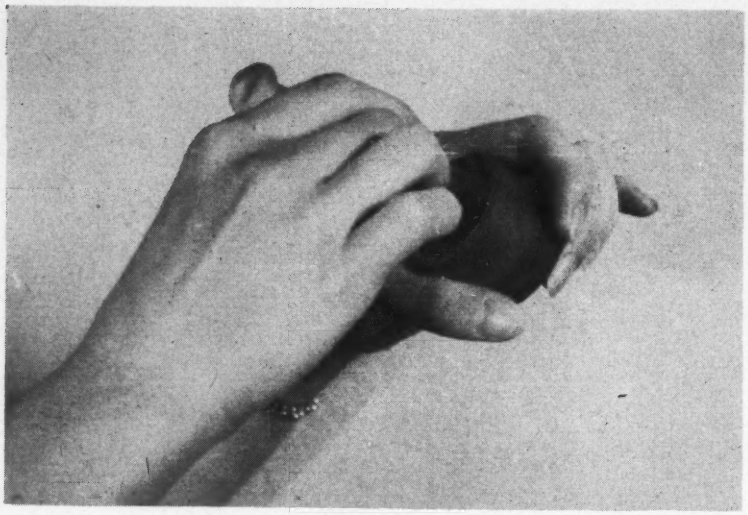

Fig. 4—Mix, rather than grind, the alloy filings with the mercury. Hold the pestle as a pen or pencil. Hold the mortar at a 45-degree angle from the horizontal to bring the mercury and alloy filings under the pestle at each turn.

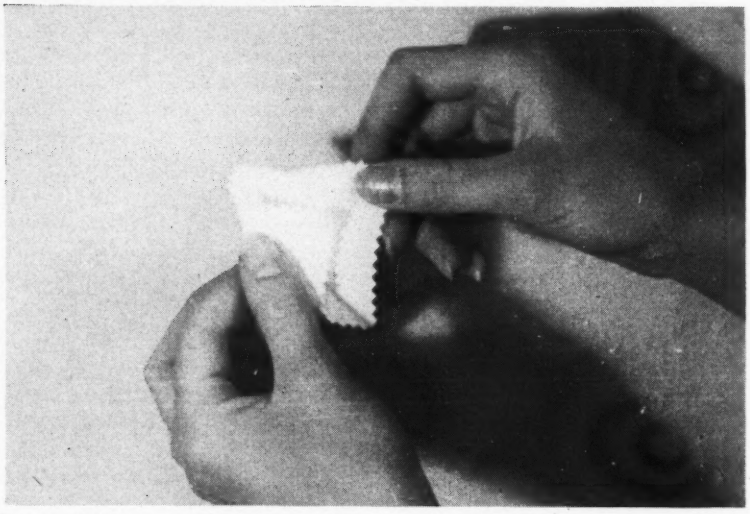

Fig. 5—Mull and roll the mixed amalgam into a rope in a squeeze cloth with the left thumb and first finger. If a light tension is maintained with the other hand, the cloth will not fold or bunch up.

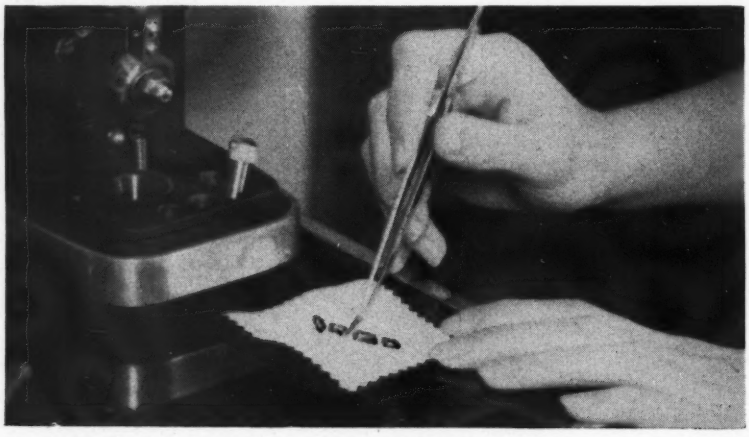

Fig. 6—Divide the rope of plastic amalgam into four or more portions with the beaks of a pair of cotton pliers.

of the mortar to mix more promptly with each turn of the pestle. When the mix is completed, spill the contents onto a squeeze cloth, avoiding all contact of the amalgam by fingers, perspiration, or moisture.

4. Pick up the silver amalgam in the squeeze cloth, and grasp it within the fold of the squeeze cloth with the left thumb and the first finger. Grasp the under corner of the squeeze cloth with the right thumb and the first finger, and mull and roll the silver amalgam into a rope about ⅛ inch in diameter with the thumb and first finger of the left hand (Fig. 5). If a light tension is maintained on the corner of the squeeze cloth with the right hand, the cloth will not fold or bunch up annoyingly. A small square of washed and dried rubber dam material, instead of the cotton square, may be used for mulling. Do *not* mull the amalgam in the bare palm nor touch it with the fingers.

5. Roll the rope of plastic silver amalgam onto another squeeze cloth or onto the *clean* and *dry* surface of the cabinet or bracket table, and divide it into four or more portions with the beaks of the cotton pliers (Fig. 6). Do *not* touch the amalgam with the fingers.

6. Pick up one portion of the divided silver amalgam with the cotton pliers, and place it in the center of the squeeze cloth which is held as before with the left thumb and first finger. As before, grasp the under corner of the squeeze cloth with the right thumb and first finger and, while maintaining a tension, roll the amalgam five times (Fig. 5). This replasticizes the silver amalgam and prepares it for better adaptation to the cavity walls. Do not touch it with the bare fingers.

7. If the first portion is too thin and wet with mercury, sharp pressure with the left thumb and first finger on the plastic silver amalgam in the center of the squeeze cloth, accompanied by a flick of the wrist, will bring droplets of mercury to the surface and whip them away. If the pressure is not maintained, the mercury will be reabsorbed instantly and will not, therefore, be shaken away.

8. Again roll the silver amalgam in the squeeze cloth into a double-pointed roll and insert it for one-half its length into the nozzle of a plunger-type amalgam carrier (Fig. 7). While holding the extruding portion of the amalgam in the cloth between the left thumb and the first finger, and steadying the fingers against the sides of the tip of the carrier, compress the portion of the silver amalgam *lightly* within the carrier by *gently* pressing the plunger down. This serves to attach the protruding point of plastic silver amalgam to the carrier so that it will not fall out if the carrier is inverted while handing it to the dentist, or if the nozzle must be pointed downward to fill a cavity in a lower tooth. The protruding point aids in depositing the silver amalgam into the farthest recesses of the cavity (Fig. 8).

9. The succeeding portions of silver amalgam are prepared in a like manner, with the exception that more of the mercury should be expressed from them. This is done by first rolling the amalgam to replasticize it, and then by *tightly* twisting the silver amalgam in the center of the squeeze cloth and whipping away the droplets of mercury which appear through the meshes of the cloth. The squeeze cloth is then untwisted and stretched or straightened to its former doubled form. The silver amalgam is rolled to a double-pointed form, and inserted into the carrier as before, ready for insertion into the cavity.

10. When more than one mix is required to fill a large cavity, the succeeding installments are mixed and made ready as before. The succeeding installments should be expressed dry.

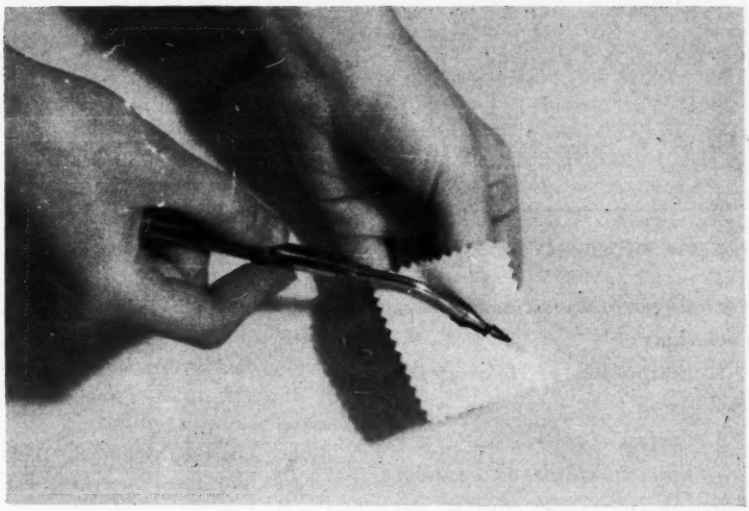

Fig. 7—Insert one portion of the rolled amalgam for one-half its length into the nozzle of a plunger-type amalgam carrier. Attach the protruding amalgam to the carrier with light pressure to the plunger.

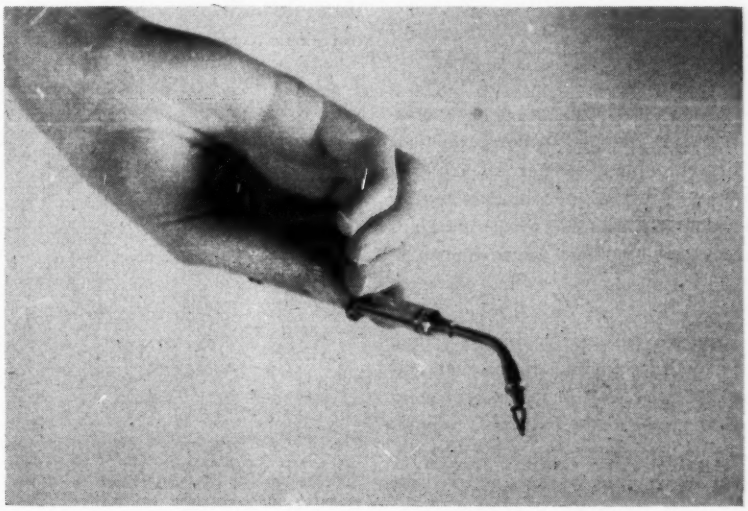

Fig. 8—Amalgam ready for insertion in the cavity.

It should be noted that careful attention must be devoted to details through every step in the technique, and that special note should be made of the importance of preventing all moisture contamination through contact with perspiration from the fingers or the palms of the hands.

13201 *Miles Avenue.*

Unsolicited Manuscripts Are Welcome

"When you have made an observation of value or reached a conclusion concerning the unusual, publish it. Avoid carrying unpublished knowledge to the grave!"—Sir William Osler.

The Cast Gold Crown

JOSEPH RUDOLPH, D.D.S., Brooklyn

Advantages of Investment Model Technique:

1. Simplicity of taking the impression.

2. Saving of time.

3. Less variables to contend with; therefore, a greater degree of accuracy.

4. Less expensive in cost of materials, including gold.

5. Excellence of fit without tension or strain.

THE CAST gold crown is becoming increasingly popular among dentists. It is undoubtedly one of the strongest forms of bridge attachments and is particularly valuable where the abutment teeth are short, where the bridge span is quite long, or where the teeth to be crowned are badly broken down.

Modern casting techniques which utilize the principle of thermal and setting expansion in investment compounds have made it possible to compensate completely for gold contraction. By taking advantage of these improved materials, it is possible to save considerable time at the chair and in the laboratory without sacrifice of accuracy and, most important of all, to have the casting fit without strain. We are all familiar with cast crowns which were prevented from going to place accurately because of the frictional contact on every surface of the abutment tooth, often necessitating excessive and guesswork grinding and trimming on the interior of the crown. Furthermore, in cementing a crown with such frictional contact, it is often noticed after the cement has set that the occlusion has been altered as a result of the thickness of cement imprisoned occlusally. The dentist often will reduce the occlusal surface of the casting in order to make the crown fit, weakening this surface so that it will wear through in a comparatively short time.

In the following technique, these drawbacks have been eliminated. The frictional contact has been retained; nevertheless, the crown goes into position on the tooth with finger pressure. The crown will go to place perfectly following cementation because the cement is not imprisoned occlusally but finds escape in the relief areas in the middle third of the circumference of the tooth (Fig. 1).

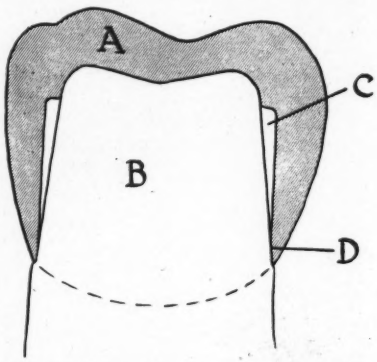

Fig. 1—Cast gold crown (A) in position on tooth preparation (B), showing a definite seat of the cast crown on the occlusal surface of the tooth preparation with a free space (C) in the middle third of the tooth and close adaptation and frictional contact at the cervical third of the tooth (D).

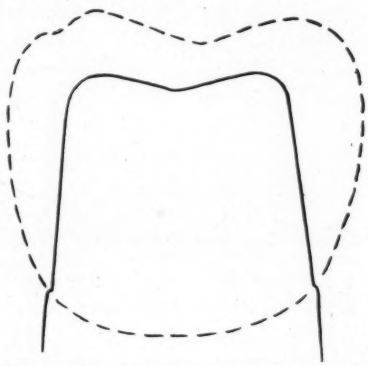

Fig. 2—Tooth preparation showing that the circumference of the crown is greater at the gingival line than at any point occlusally.

Tooth Preparation

1. The occlusal surface should be reduced sufficiently to clear the bite so that it will permit a gold veneer of at least 1-millimeter thickness and will allow complete excursions of the mandible without interference in mastication.

2. All mesial, distal, buccal, and lingual surfaces which are convex from the occlusal to the gingival line must be reduced to a point at which the circumference of the crown of the tooth at the gingival line is greater than the circumference at any point occlusally (Fig. 2). This gingival line may be the true gingival line of the tooth or it may be an arbitrary gingival line which is not necessarily at or below the free margin of the gingiva. In some cases of recession, however, it would be unwise to carry the preparation below the free gingival margin, particularly on the buccal or lingual sides, because of unnecessary destruction of sound tooth structure and probable pulp involvement.

3. Sometimes molars, both vital and pulpless, are broken down so badly that they must be rebuilt before crown construction:

a) All caries must be removed, and undercuts produced if possible.

b) If the tooth is pulpless, a pin must be placed in the pulp canal.

c) Select a copper band which fits the broken-down tooth closely, festoon the band at the gingival margin, clear the occlusion, and fit the band on the tooth.

d) Mix and pack amalgam to restore the tooth, and leave the band on the tooth overnight.

e) Slit the band at the next sitting, and proceed with usual crown preparation.

4. Be sure that all the sharp corners at the line angles have been eliminated and that the entire preparation has a smooth finish.

Taking the Impression

1. Select a 36-gauge copper band that will fit tightly at the circumference of the neck of the tooth (Fig. 3). If it is a tempered band, anneal it by heating to a cherry red and plunging it into cold water or alcohol. It is better to have the band too tight than too loose; the tight band can be enlarged with band-stretching pliers.

2. The band is then re-annealed and fitted over the tooth preparation by pressing it down gently toward the cervical margin. The soft band shapes itself to the neck of the tooth.

3. After the band has passed just beneath the gingival margin, the cervical outline is marked on it with a sharp instrument, the band is removed, and the surplus is cut away.

4. Re-anneal and test the band again for tightness at the festooned line. The softened band, being forced into position, automatically follows the contour of the tooth at the gingival line.

5. Burnish only at the gingival line and only on one surface, using a small, flat instrument. If the band is too long and curls under, remove the excess by cutting it away.

6. Replace the band into position, and repeat this process on all four sides. The tight fit, contour, and festooning will be reproduced later in the cast crown. The band, when in position, should extend ¼ inch beyond the occlusal surface of the prepared tooth. There will be a space between the tooth and the band except at the gingiva due to the tapering of the tooth. The band should hold its position on the tooth by virtue of its tightness at the gingival line.

7. Bend in the edge of the band occlusally or make holes along the occlusal edge of the band (Fig. 3), the purpose being to enable removal of the band and the compound impression at the same time without separating the band and the compound.

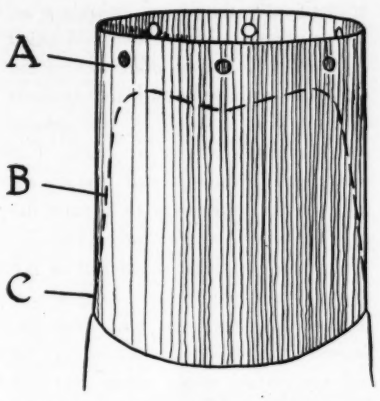

Fig. 3—Annealed, festooned copper band with holes (A) at occlusal edge for retention of modeling compound; B, tooth preparation; C, frictional contact at cervical third.

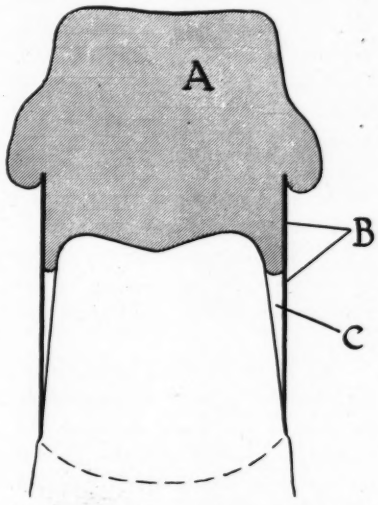

Fig. 4—Modeling compound impression (A) of the occlusal third of the tooth; B, copper band; C, free space for excess cement.

8. With the band in position on the tooth, soften one end (½ inch) of a modeling compound stick and insert it with some pressure into the band, being careful not to tilt the band from its correct position (Fig. 4). Chill with cold water and remove gently in a straight line. *The compound will not reach down to the gingival line.* This is a distinct advantage in that the fit is perfect at the cervical line, and the seat is accurate on the occlusal surface; moreover, there is a free space around the middle third of the tooth into which the excess cement will flow during cementation.

Investing the Model

1. Place a strip of Kerr's soft, green, 28-gauge sheet wax around the copper band to form a collar. It should extend approximately ½ inch beyond the gingival margin of the band.

2. Mix cristobalite model investment according to the manufacturer's directions. This investment is preferred to cristobalite inlay investment because the model investment has a crushing strength of 4000 pounds per square inch and that of the inlay investment is only 1500 pounds per square inch. The setting expansion is 0.2 per cent, and the thermal expansion at 1400° F. is 1.05 per cent.

3. To eliminate air bubbles in the investment model, first paint the interior of the impression with Kerr's debubblizer or Wald's investing adherent. Then add the thickly mixed investment material, vibrate, and lay it aside to set. Sprinkle a few grains of dry investment on top of the mix to increase its hardness (Fig. 5). The setting time is twenty minutes; however, the model may be permitted to stand overnight or longer if necessary.

4. When the model is completely set, remove the wax collar, and slit the copper band from the gingival to the occlusal with a separating disc (Fig. 6). Pry the edges apart slightly, and place the model and band in hot water for one-half minute to soften the compound. The compound and the copper band will peel away, disclosing a model with a finishing line as outlined by the edge of the copper band and an occlusal surface exactly like that of the prepared tooth.

The middle third of the circumference of the model, however, is actually an impression of the interior of the copper band and not of the tooth. The free space which will be present when the casting is placed on the tooth will be filled with cement. It will also reduce the amount of gold used, and will not interfere with the anatomical form of the tooth in wax carving inasmuch as the buccal and lingual surfaces are quite convex, and the mesial and distal surfaces are the same but to a lesser degree.

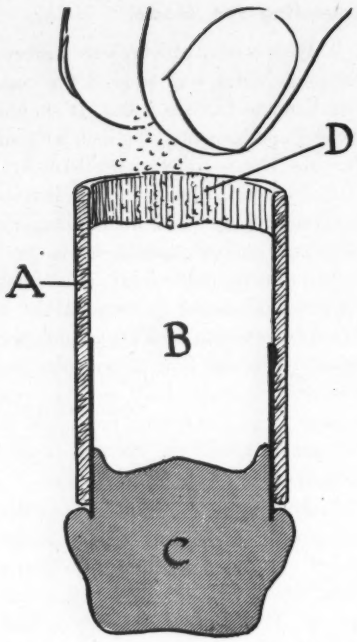

Fig. 5—Wax collar (A) filled with investment mix (B); C, compound impression; D, dry powder sprinkled on surface of investment to absorb excess moisture.

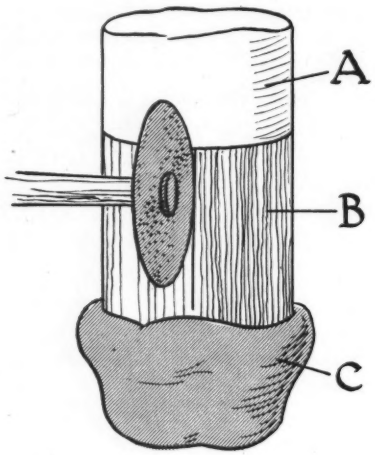

Fig. 6—A, Investment model; B, copper band; C, modeling compound. Slit copper band with separating disc preliminary to separating compound from model.

5. If the model was cut by the disc during the process of slitting the copper band, this can be disregarded; the cut will appear in the interior of the crown casting as a ridge and can be smoothed with a mounted carborundum stone.

Making the Wax Pattern

1. If the abutment tooth is sound, anatomically unmarred, take a plaster impression of the occlusal third of the tooth. This is done before the tooth is prepared, and the impression is laid aside until the investment model has been made. Cut sluice-ways mesially and distally in the plaster impression to permit the exit of the molten wax later (Fig. 7).

2. Adapt a piece of tin foil to the occlusal surface of the impression. Remove the tin foil, and heat the plaster impression in hot water. In the meantime, place some warmed Kerr's regular blue inlay wax on the occlusal surface of the investment model (Fig. 8), replace the tin foil into the heated plaster impression, and insert the investment model with direct pressure into the plaster impression as far as it will go (Fig. 9). Cool and remove the investment model to which the wax pattern will adhere, the result being a reproduction of the anatomical formation of the occlusal surface of the abutment tooth.

3. It is now comparatively simple to complete the contouring of the approximal, buccal, and lingual surfaces.

a) If there is an approximating tooth or a tooth in opposition, the case is articulated as usual, the contact is restored, and the occlusal surface of the wax pattern is brought to proper articulation.

b) If the prepared tooth is not in contact with another tooth or does not articulate with any tooth or teeth in the opposing jaw, and if it was a mutilated tooth before preparation, the wax pattern may be carved freehand. A metal die form of the occlusal surface of the molar teeth (used in making two-piece crowns) may be used, however, for making the wax pattern of the occlusal surface, and the rest of the pattern can be contoured and carved to form.

4. It is important to reproduce the grooves, cusps, marginal ridges, and marginal ridge spillways on the occlusal surface to restore the individual tooth to functional occlusal relationship. Flat occlusal surfaces place an undue strain on the teeth. It is also essential to maintain the integrity of the soft tissue and to give continued protection to this vulnerable area by reproducing the normal outline of the buccal and lingual surfaces and proper interproximal contact point.

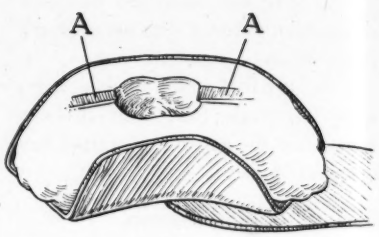

Fig. 7—Plaster of Paris impression of the occlusal third of the tooth before it is prepared for the reception of the cast crown. A, sluiceways cut in impression to permit exit of molten wax later.

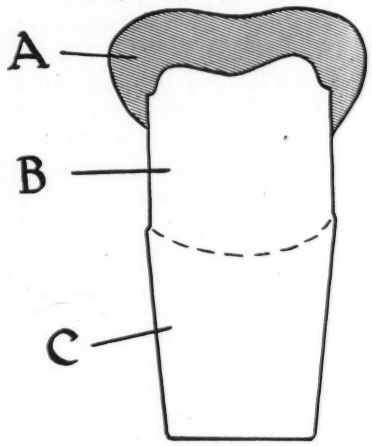

Fig. 8—Attach a surplus of inlay wax (A) directly to the occlusal third of the investment model (B); C, base of model.

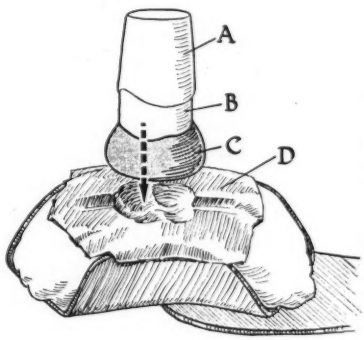

Fig. 9—Direct the waxed model (A, base; B, investment; C, wax) with steady pressure into the heated plaster impression which is covered with tin foil (D), the excess wax flowing in sluice-ways.

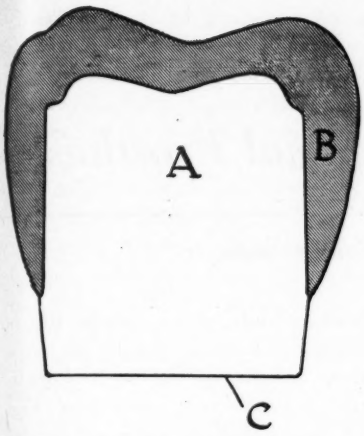

Fig. 10—Investment model (A) shortened at base (C) for insertion into the inlay casting ring; B, wax pattern anatomically contoured.

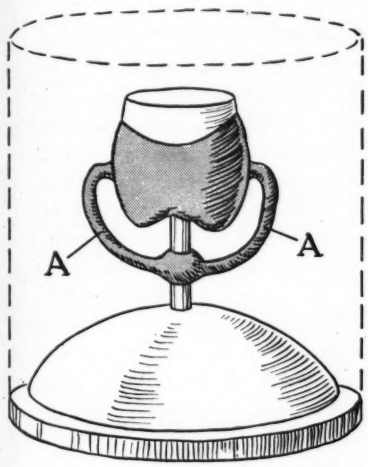

Fig. 11—Wax pattern with auxiliary sprues ready for investment.

Investment of Wax Pattern

The wax pattern is now ready for investment.

1. Remove as much of the base of the investment model as possible so that the wax pattern will fit into the inlay ring (Fig. 10).

2. Line the ring with asbestos to permit full expansion. It is desirable to sprue the crown occlusally, and to insert two auxiliary sprues buccally and lingually (Fig. 11). The model investment material or any satisfactory inlay investment material may be used for the outer investment.

3. Permit the investment to set for about an hour, then proceed with the wax elimination. Use low heat for twenty minutes, then high heat for thirty minutes. When the sprue hole is "red," cast. To forestall the cooling of the ring, premelt the casting gold; then, while the gold is hot, remove the ring from the fire, remelt the gold, and cast with a minimum of delay.

4. It is suggested that one of the sprue projections be left on the cast crown buccally or lingually until the bridge is ready for cementation. The projection will safeguard the edges of the crown from mutilation inasmuch as this projection will offer a convenient grip when removing the crown from the tooth (Fig. 12).

5. Before dismissing the patient, after preparing the tooth and taking the impression, isolate the tooth, wash it with a solution of chloroform and alcohol, dry thoroughly, seal the tubules with chlororesin, and cover with a thin aluminum crown filled with a mix of zinc oxide and eugenol (Fig. 13). This is removed easily at the subsequent sitting.

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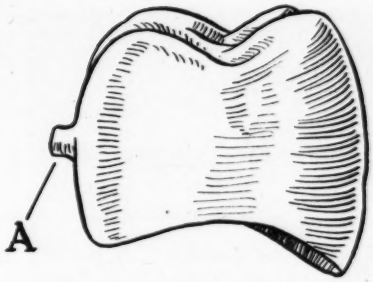

Fig. 12—Cast gold crown with a portion of an auxiliary sprue (A) remaining to prevent mutilation of the edge of the crown during removal from the tooth.

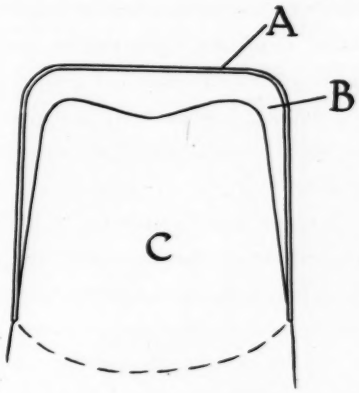

Fig. 13—Aluminum shell crown (A) containing zinc oxide-eugenol paste (B) for protection of tooth preparation (C) between appointments.

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*Eye Replacement by Acrylic Maxillofacial Prosthesis**

LT. COMDR. PHELPS J. MURPHEY (DC) USNR, and LT. LEON SCHLOSSBERG H-V(S) USNR

The Naval dental officer, because of his background and training in denture prosthesis, together with the aid of a medical illustrator, is ideally equipped to cooperate with the medical officer in restoring lost parts of the face through maxillofacial prostheses.

Present war casualties have demonstrated the necessity for adequate eye replacements which will restore the normal contours of the face, be functional in their movements, accurate in duplication of color and light-reflecting properties, and satisfy esthetic requirements. The suggested fundamental technique for eye replacement is familiar to the Naval dental officer, who may discover improvements or refinements in the basic technique as experience is acquired.

The many advantages of the described acrylic ocular replacement may be summarized as follows:

1. The natural contours of the face before the eye was lost are restored in whole or in part.

2. The replacement, because it is adapted to muscle coordination, is capable of lateral, oblique, and vertical movements of varying degree.

3. Light reflections may be reproduced accurately to simulate the existing eye.

4. Color matching or variation may be controlled to satisfy esthetic requirements.

5. When the prosthesis contacts the surfaces of the eye socket, it is capable of exerting a stimulating effect on orbital tissues, and of increasing the strength of the remaining eye muscle segments.

6. The acrylic material used is only slightly susceptible to etching from the eye socket fluids or secretions and, if scratched from handling, it may be repolished.

7. The acrylic prosthesis is resistant to usual accidental stresses, and, if it is placed under extreme stress, a clean break can be repolymerized or the entire eye readily duplicated.

MOST EYE casualty patients immediately display their disfigurement, with the collapsed appearance of the eye socket revealing the extent or absence of the socket contents. Eye replacements made of glass or acrylic resin often are apt to be a source of extreme embarrassment and may retard the patient's rehabilitation because of the disheartening cosmetic results.[1] Delay in return to limited military duty or to civilian life is necessitated often. Should the prosthesis not provide the essential qualities of an adequate restoration (Fig. 1), its psychologic value will be destroyed. It is imperative, therefore, to devise a restoration which will incorporate the desired objectives. An individually made prosthesis will more nearly supply the requirements.

Anatomic Considerations

Each patient is examined first by the ophthalmologist before impressions are taken to make sure that the eye socket is in excellent condition to receive the replacement. Inasmuch as each eye socket presents a different structural and functional requirement, the existing muscle movements to be accommodated should be studied first. The degree of potential movement of the replacement will be determined by the lateral, oblique, and vertical movements of the existing muscle attachments in the walls of the socket.

Orbital Muscles—There are six extrinsic muscles of the eyeball: the four recti muscles, the superior, inferior, medial, and lateral; and the two oblique muscles, the superior and inferior.

Recti Muscles: These muscles arise from a common tendinous ring, attached around the optic foramen, and pierce the fascial sheath as tendons, being inserted into the sclera and attached in front of the equator of the eyeball.

Superior Oblique Muscle: This muscle arises from just above the margin of the optic foramen, and

*Reprinted by special permission from the *United States Naval Medical Bulletin*, 43:1085-1099 (December) 1944.

[1]Penn, J.; Brown, L. J.; Berry, T. B.; Schulmeister, A.; Roylance, J.; and Ormerod, C. L.: Problems in Eyelid and Socket Reconstruction, Brenthurst Papers, Number 4, Brenthurst Red Cross Military Hospital for Plastic Surgery, Johannesburg, South Africa (April) 1944.

passes forward to form a narrow tendon at the anterior part of the orbit; the tendon passes through the fibrocartilaginous pully attached to the roof of the orbit. It passes downward and laterally from the pully, to be inserted into the sclera between the superior and lateral recti.

Inferior Oblique Muscle: This muscle arises lateral to the nasolacrimal groove; it is a slender, narrow band which passes laterally and curves upward to be inserted into the sclera between the recti muscles, farther back than the superior oblique muscle.

Movements of Muscle Remnants—The remnants of these muscles, created by the whole or partial eyeball enucleation or evisceration, determine the movement possible in the completed prosthesis. These muscle movements may be interpreted when studying the eye socket. Should the opposite eye move to the left, the back wall of the socket will move forward on its medial half and backward on its lateral half. This wall moves in the opposite direction in movements to the right.

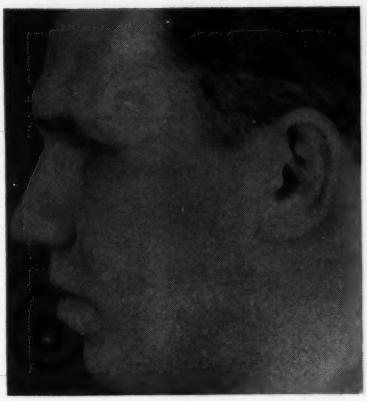
The principle muscle to be accommodated is the levator palpebrae superioris, which lies beneath the roof of the orbit and covers the superior rectus muscle. It arises from the same point above and in front of the optic foramen, and passes forward to be inserted into the upper lid in a membranous expansion, posterior to fibers of the orbicularis oculi in the upper lid. When the patient looks down there is a forceful retention action of this muscle together with a forward expulsion action of the muscle segments remaining in the fascia of the back wall. These muscles must be accommodated by a concavity on the back portion of the prosthesis. If this is not taken into consideration, the replacement will flip out. In like manner the orbicularis oculi muscle fibers in the lower lid must be utilized to enable the patient to move the eye upward. This is done by building an extension on lower margin of prosthesis.

Duplication of the Eye Socket

Armamentarium—The first step in making the prosthesis, that of taking an impression of the eye socket, is expedited by simple equipment planned for this particular prosthesis.

1. It includes a plaster bowl and spatula, a thermometer, a beaker of water and one of cubed ice, and a tube of a hydrocolloid or alginate impression material with measuring cup and scissors.

2. To provide an efficient method of injecting the impression material



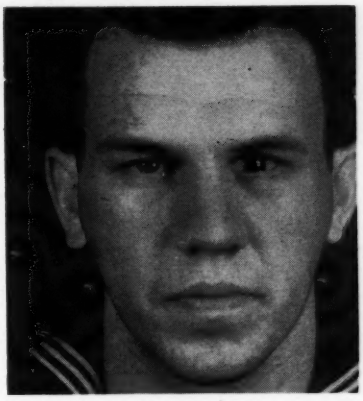


Fig. 1—An unsatisfactory replacement: Esthetic requirements are not adequate, and normal contours of the face have not been restored.

Fig. 2—Glass tube injecting the impression material.

Fig. 3—Transparent impression tray held in position.

Fig. 4—Impression being checked for accuracy.

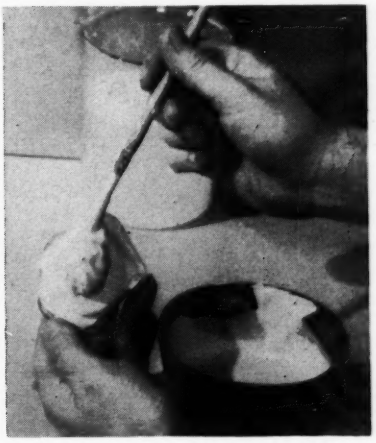


Fig. 5—A stone working cast is poured.

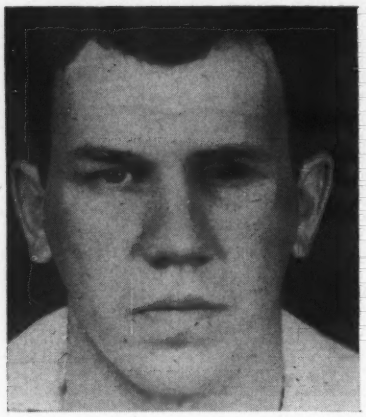


Fig. 6—Normal relaxation of the lid.

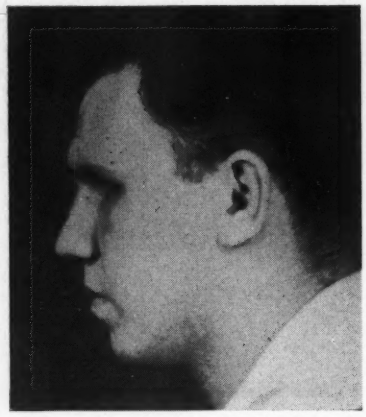


Fig. 7—Normal facial contours to be restored.

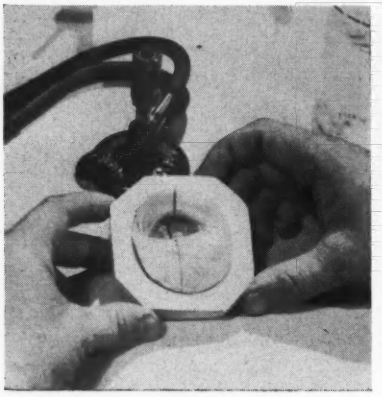


Fig. 8—Working cast ready to receive the wax impression.

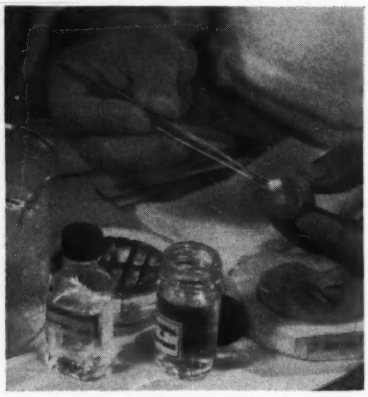


Fig. 9—The completed wax model is smoothed down.

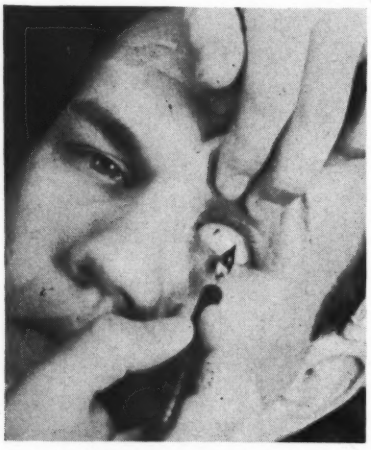


Fig. 10—The iris is marked on the sclera.

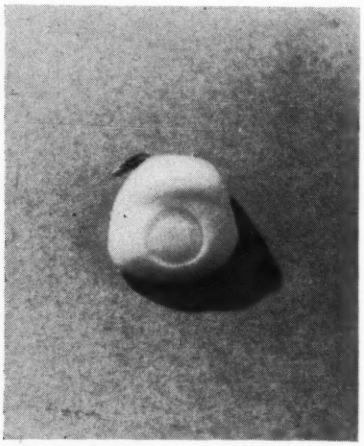


Fig. 11—The iris insert has been inlayed into the acrylic sclera.

into the eye vestibule, a glass tube has been designed which terminates in a rubber nursing nipple severed at the tip. This allows the material to flow in a rodlike pattern when pressure is applied on the glass plunger of the tube.

3. Impression trays made of a clear acrylic resin distribute the material evenly over the eye area, and allow constant observation of the material while it is setting.

Taking the Impression—With the forementioned materials available, each step is executed carefully.

1. When an alginate material is used, the temperature of the water is lowered to approximately 70° F. to 75° F. by the addition of the cubed ice. The water is then measured in the 55 cubic centimeter measuring cup and poured into the bowl. The end of the colloid tube is slit, and the retarder is removed and placed in the water to dissolve. The impression powder is added, and the mixture is spatulated for one minute. The mix is then inserted into the glass tube, and the plunger is replaced.

2. If a hydrocolloid material is used, it is prepared by heating in a water bath for ten minutes. After cooling to a temperature that the tissues will tolerate, the end of the tube is slit, the contents are injected into the glass tube, and the plunger is replaced.

3. The nipple end is then inserted into the patient's eye socket, and pressure is exerted on the plunger to expel the material (Fig. 2).

4. After the cavity is filled, the tube is withdrawn carefully, and the remaining material is spread over the external eye area.

5. The impression tray is then placed over the material and pressure is exerted further to confine the impression. The tray is held in place securely for four minutes to allow for hardening (Fig. 3).

6. After the impression material has hardened, the adjacent skin is pushed away gently from the material to facilitate removal of the impression. After removal (Fig. 4), the negative reproduction may be checked for accuracy, then washed in running tap water to remove any eye secretions. The impression is surface-hardened or fixed by immersion in potassium sulfate solution for fifteen minutes.

7. A stone working cast is poured by carefully vibrating the stone mix over the impression, and pouring as for a denture base (Fig. 5).

Photographic Orientation

While the cast is hardening, photographs are taken of the eye area to provide a means of accurate meas-

urement of the iris and pupil, and to facilitate registration of the palpebral or lid contours.

1. Three drops of pontocaine hydrochloride administered by the physician will relax the eye for photography.

2. A ruler held alongside a plane of the existing eye enables an exact comparison to be made when another ruler is placed in a similar position on the ground glass of the camera. Thus an exact actual-size picture of the iris and pupil can be made.

3. Lateral profile views are taken to determine the normal facial contour which should be restored, as well as to ascertain correct lid relaxation about the eye orifice. These photographs provide an accurate anatomic guide in the creation of the prosthetic counterpart (Figs. 6 and 7).

Wax Pattern

1. The working cast, meanwhile, has hardened sufficiently to allow separation from the impression material. The cast is lubricated and a plaster lock is poured around it. The cast is then cut through vertically to allow removal of the wax pattern from the undercut portions of the socket (Fig. 8). Liquid petrolatum painted on the cast provides lubrication of the wax impression.

2. One-fourth sheet of baseplate wax is adequate for the wax pattern. This is warmed over a low flame and is forced into the cast. Excess wax is removed and the impression is chilled by immersion in ice water.

3. The wax pattern may now be removed safely from the cast and trimmed where necessary, or wax may be added in deficient areas until the pattern is adequate. Those lid areas to be emphasized may be added to until the wax pattern reproduces the desired facial morphology. Extensions to the pattern may be made, even though they do not necessarily conform to the natural curvature of an eye. This is done to compensate for the loss of tissue in the orbit and of tone in the remaining muscle segments. These extensions are constructed on those parts of the prosthesis not visible after insertion.

Fig. 13—The flask is separated and the plasticine and paper pattern have been removed.

Fig. 14—The painted iris has been inserted and the blood vessels have been drawn.

Fig. 15—The scleral sulcus is accentuated by grinding with a mounted stone.

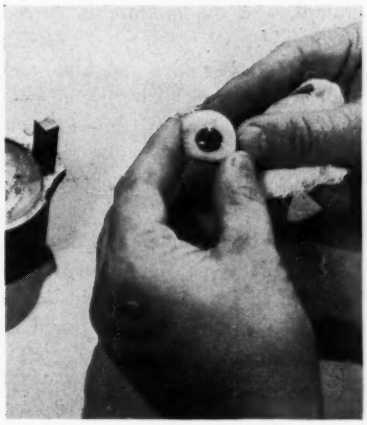


Fig. 16—Completed prosthesis, ready for delivery to the patient.

4. The completed wax model is smoothed, using a solution of equal parts of acetone and alcohol on a cotton pellet (Fig. 9).

5. The wax pattern is dropped into ice water, removed, and lubricated with liquid petrolatum before trying in the eye socket. Additional carving or patterning may be done in order to adapt the pattern to the functions of the particular orifice. Lid reaction should mimic the existing eye, and the profile view of the patient should duplicate the contour of the uninjured side.

6. When the results appear satisfactory, the wax pattern may be removed for duplication in an acrylic material. After investing with stone and curing, the wax may be boiled out of the flask with hot water. While the flask is still hot, all surfaces are coated with an alginate material and allowed to dry, thereby providing for separation of the cured acrylic sclera.

Coloring

Obtaining the Scleral Color—The medical illustrator, in the meantime, paints an exact reproduction of the scleral color of the patient's existing eye. This is used for matching the acrylic mix used in the scleral part.

1. A series of scleral colors have been cured in sample eye shapes, to arrive at the color after the material has been polymerized. These scleral colors are designated by number, depending on their color tints, and are similar to the shade guide used in the selection of porcelain teeth. These samples are prepared by measuring clear fluorescent acrylic material into a pint glass jar. To this is added titanium oxide in small quantities to supply the desired whitish back-

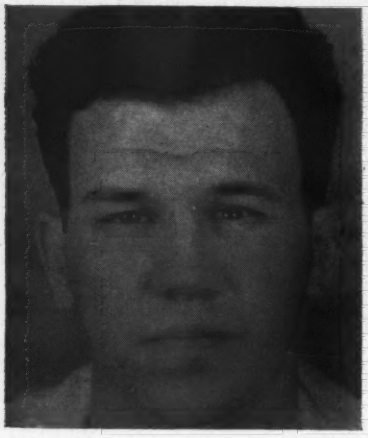


Fig. 17—Finished prosthesis in place.

Fig. 18—Natural contours of the face restored.

ground, and the mixture is stirred thoroughly.

2. The basic colors, red, blue, and yellow, are added bit by bit in powder form and the mixture is spatulated.

3. A small quantity of this mix is placed in a salve jar and to this is added the liquid monomer, drop by drop, until the powdered polymer is saturated to a degree of slight liquid excess. This sample is then cured in the typical scleral pattern.

4. After polishing, the sample is compared with the color of the patient's sclera. This is done best by means of a sheet of black photographic paper into which two small apertures, about 1/3 inch square, have been cut about 1/4 inch apart. This furnishes an excellent mask, and will eliminate the influence of environmental color reflection while matching colors with the sample painted on the paper.

By holding the black mask about 10 inches from the patient's remaining eye, filling one of the square holes with white paper, and looking through the other square into the sclera, the difference in color may be seen readily and the color to be used determined. While colors are being matched the eye should be well illuminated by north daylight.

5. The sclera varies in individuals from a prominent blue to a yellowish green, and the color is not uniform, the area immediately around the iris being bluer than elsewhere. The blue blends into a yellowish orange and then into a vermilion tinge. The change into the vermilion is due to the abundance of blood vessels in that region. Occasionally yellowish or whitish spots may be found. The area of the patient's sclera used to compare with the sample acrylic sclera is from 1/8 to 1/4 inch from the border of the iris, as this area is representative of the local scleral color. The other tints mentioned may be added to the cured acrylic sclera before the curing of the clear acrylic over the face of the prosthesis.

Curing the Acrylic Scleral Portion—1. After selecting the mix to be used, a small quantity is measured into a salve jar and the liquid monomer added as before. The mix is allowed to become thoroughly saturated by closing the lid on the jar. When the mix does not stick to the spatula, it is ready for packing.

2. Cellophane sheets, previously soaked in water and wrung dry, are used to handle the puttylike mix. It is packed with moderate compression into the mold, and in excess to provide additional compression when it is trial-packed.

3. Two sheets of cellophane are placed between the halves of the flask before closure, after which it is placed in a flask clamp, and moderate, steady pressure is applied.

4. The flask is then removed from the clamp and separated, the excess material being removed carefully with the spatula. Additional material should be added at this time provided an excess is not apparent. The case may be trial-packed again if necessary, or it may be closed finally without the cellophane. It is then ready for curing.

5. Polymerization is accomplished by placing the flask in the clamp in tap water, and heating for four hours at 160° F. For the last fifteen minutes of this period the water is kept at a steady boil. The case is then cooled in cold water for fifteen minutes or is allowed to cool on the bench.

6. The flask may be opened carefully and the cured sclera cut from its investment for trimming and polishing. The excess may be removed by the usual vulcanite abrasive stones and cones, and at the same time the cornea may be shaped additionally to the desired form.

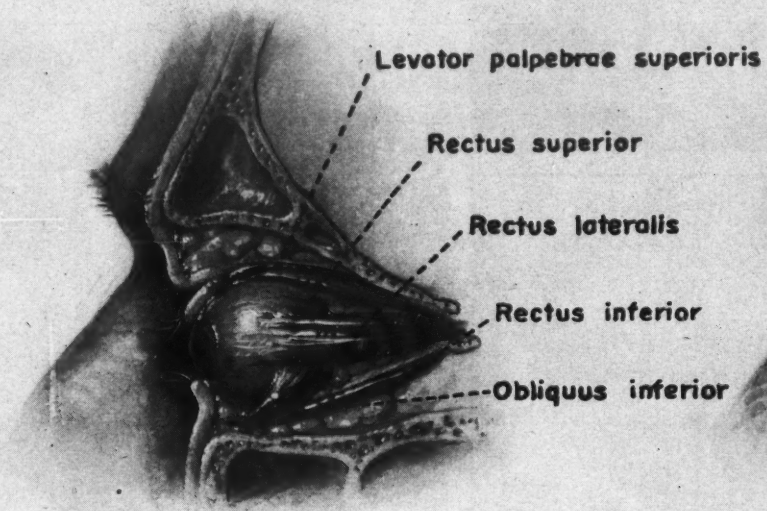
7. It is then polished on the lathe with fine-grit flour of pumice. A felt cone is used, followed with a soft bristle brush at medium motor speed to prevent scratching, surface abrasion scorching, or distortion. A final high polish is given with a white rag wheel, at medium motor speed, using prepared chalk until the surface is smooth as glass and free from any artifacts or scratches.

Painting the Iris and Pupil Insert—1. While the acrylic sclera is being polymerized, the medical illustrator studies the photographs, comparing them with the patient's iris, to determine the size of the iris to be painted. A millimeter in diameter is allowed for enlargement, because of the magnification produced by the clear acrylic mass which will subsequently be cured over the painted iris.

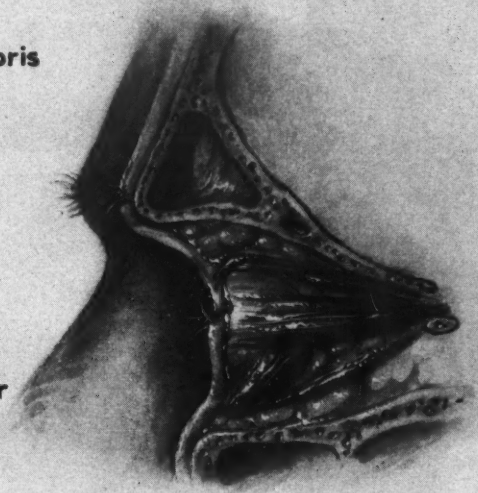
2. The iris is first outlined with the compass in pencil, on a good quality smooth, water-color paper. A small pupil is outlined for daytime wear, and a larger pupil for evening wear. An average size is usually drawn for both day and evening wear. The pupil is filled with India ink, and the color around the pupil is mixed from the three primary colors, red, blue, and yellow. Lacquer colors have proved to be the most satisfactory. When the mixed color closely matches the iris color of the patient, a small dab is painted on a piece of paper and allowed to dry. This color is compared

Fig. 19—Cases before and after receiving eye prostheses.

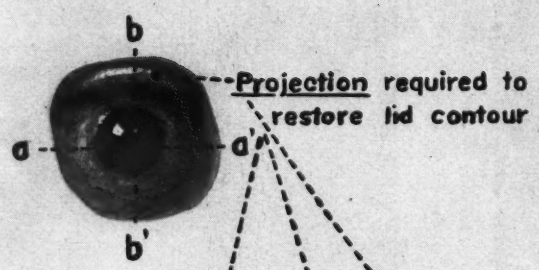
OCULAR REPLACEMENT BY ACRYLIC PROSTHESIS

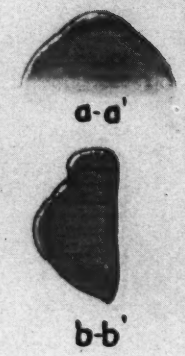


Vertical section through orbital cavity



After evisceration





Side

Back

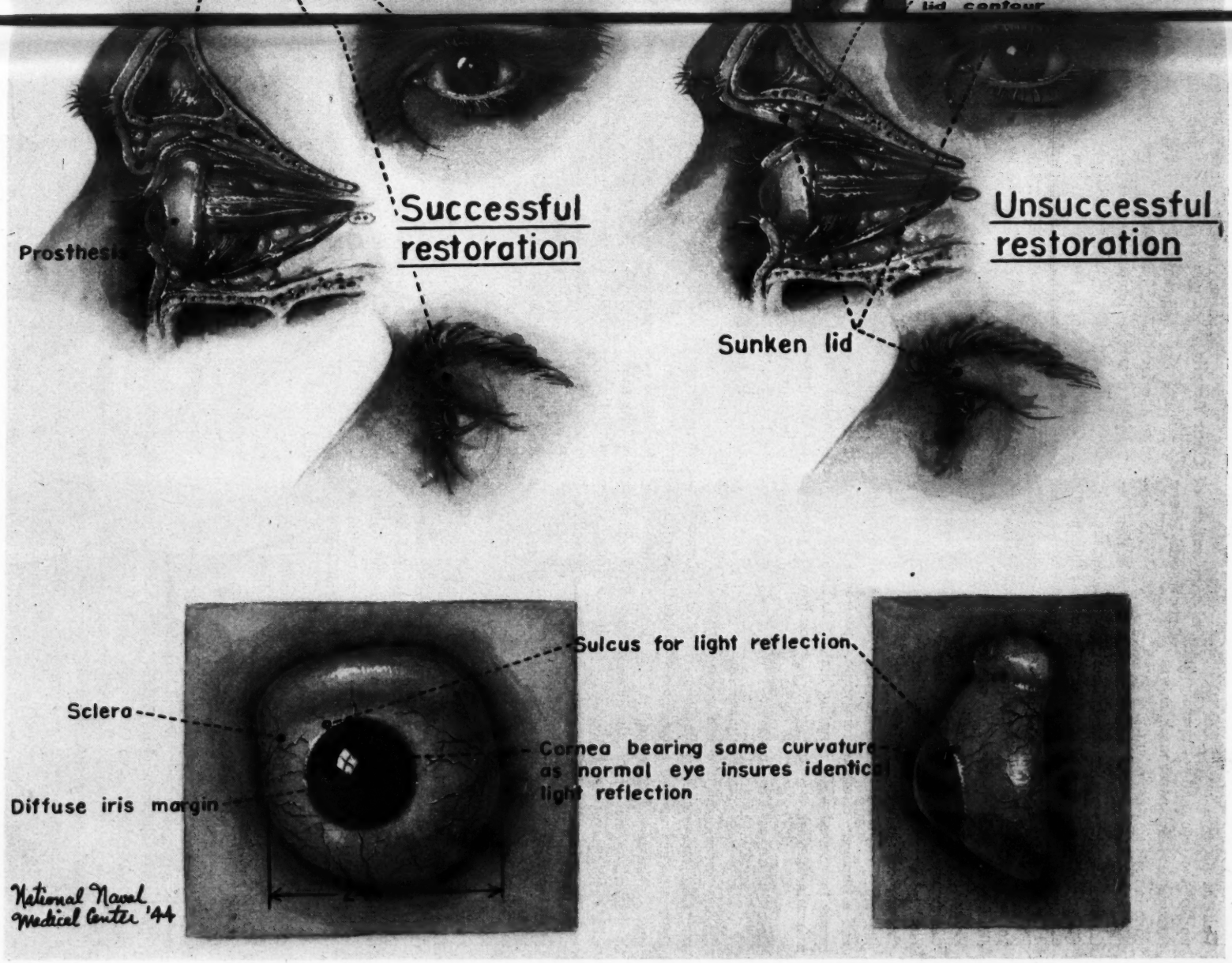

Successful restoration
Unsuccessful restoration
Sunken lid
Sulcus for light reflection
Sclera
Cornea bearing same curvature as normal eye insures identical light reflection
Diffuse iris margin
National Naval Medical Center '44

Fig. 12

with the patient's iris by holding it up to the eye and comparing it through the black paper mask, as was done in matching the sclera.

3. More color is added as desired, the light areas are eliminated, lines radiating from the pupil are introduced as needed to emphasize detail, and specks of other colors, such as yellow or green, are spotted in to simulate the existing iris. This copy should be compared frequently with the natural iris with the aid of the black paper mask. Upon completion the painted iris is cut carefully from the paper, coated with clear lacquer, and a duplicate is made from white paper to be used while investing the sclera in the flask.

Orientation of the Iris

1. The polished sclera is placed in the eye socket, and the eye movements, lid apertures, and physiologic restoration are checked again for accuracy. The exact location of the iris is marked on the face of the sclera with etching ink (Fig. 10).

2. The eye portion is then removed and the iris location accentuated with ink. A mounted inverted cone is used to outline the undercut just within the line marked, and a small stone is used to flatten the areas or to provide a slight convexity to the surface within the cut circle. This inlay (Fig. 11) is 1 millimeter below the surface of the face of the sclera.

3. The paper pattern should tuck into the undercuts around the periphery of the circle, and should lie without buckling in an easy manner within the inlay. This is most important because it assures a pleasing, diffuse iris margin in the encompassing sclera. Should the inlay be larger than the iris, a noticeable line will betray the iris inlay around its margin and destroy the illusion of depth. With the paper pattern of the iris in the inlay, a stone is used to round off the buckled acrylic margins of the insert and blend them into the contours of the sclera. This also roughens the surface of the face of the sclera in order to receive the drawing in of blood vessels and tinted scleral areas.

Polymerization of Clear Acrylic Cornea and Sclera

1. Plasticine is added to the face of the sclera and modeled in a dome shape over the iris area. Small portions of thin plasticine are added to the sides of the dome to create a small concave depression around the iris margin. This duplicates the anatomic concavity observed in the natural eye, which is termed the scleral sulcus (Fig. 12). The orientation of the prosthesis may be obtained from sketches of the patient's eye, from the eye prosthesis, and from holding the prosthesis over the natural eye.

2. The cornea is then invested with sculptured plasticine in the brass flask; and after the stone has hardened, the flask is separated and the plasticine and paper pattern are removed (Fig. 13).

3. The medical illustrator then inserts the painted iris into the cut surface, and draws simulated blood vessels on the scleral surface with colorfast drafting inks to match the patient's own sclera. These inks actually etch the scleral surface, and are preferable to colored threads because they are more realistic (Fig. 14). Yellow, red, or blue tints, painted with lacquer, are also added at this time.

4. Clear fluorescent acrylic polymer is measured into a small crucible, using only about one-fourth the quantity used in the sclera, and this is placed in the mixing salve jar. The monomer liquid is added, drop by drop, until the powder is saturated to a slight liquid excess. This mixture is spatulated thoroughly, and the jar lid replaced to allow for additional saturation for from five to ten minutes.

5. The top half of the flask is tinfoiled carefully over those areas which will be in contact with the clear acrylic when the flask is closed. As before, the mix is not used until it has the feel of putty and does not stick to the spatula. A small quantity is removed and handled with cellophane while packing it over the face of the painted iris and scleral areas and the upper half of the flask. Cellophane sheets are placed between the acrylic layers and the flask is closed and clamped in a flask clamp.

6. The flask is opened again, the cellophane removed, and the quantity of the material checked. As before, the case may be trial-packed if required, or the final closure may be made for curing. The flask, still in the clamp, is placed in a tepid water bath and cured for two hours at 165° F.; again the water is brought to a rapid boil during the last fifteen minutes of the cure. The flask is cooled, opened, and the prosthesis removed from its investment.

Final Finishing and Delivery

1. Mounted abrasive stones are used first to shape the clear acrylic part of the prosthesis. It is then polished on the lathe with powdered pumice on felt cones and a soft bristle brush, and the final high polish is given with a rag wheel and prepared chalk. The iris is now visible through the clear acrylic. The center of the dome of the clear acrylic layer should be exactly over the center of the pupil, and it must be symmetrical in contour.

2. The concave depression in the clear acrylic around the margin of the iris is accentuated by grinding with a small mounted stone (Fig. 15). This step is postponed until this time because of the possibility of the clear acrylic distorting the indicated location of the iris.

3. The prosthesis is again taken to the lathe, and the soft-bristle brush wheel is used with powdered pumice to polish the bottom of the concave scleral sulcus at the periphery of the domed acrylic layer directly over the iris. This eliminates a continuity of light reflection from the iris area onto the scleral areas, and captures highlight reflections on the clear acrylic over the artificial iris similar to those of the natural eye. Any unusual light reflection may be corrected by grinding the surface of the clear acrylic layer to conform to the anatomic form of the natural eye. Bars of light reflected from fluorescent light bulbs may be duplicated exactly in the acrylic prosthesis to match light

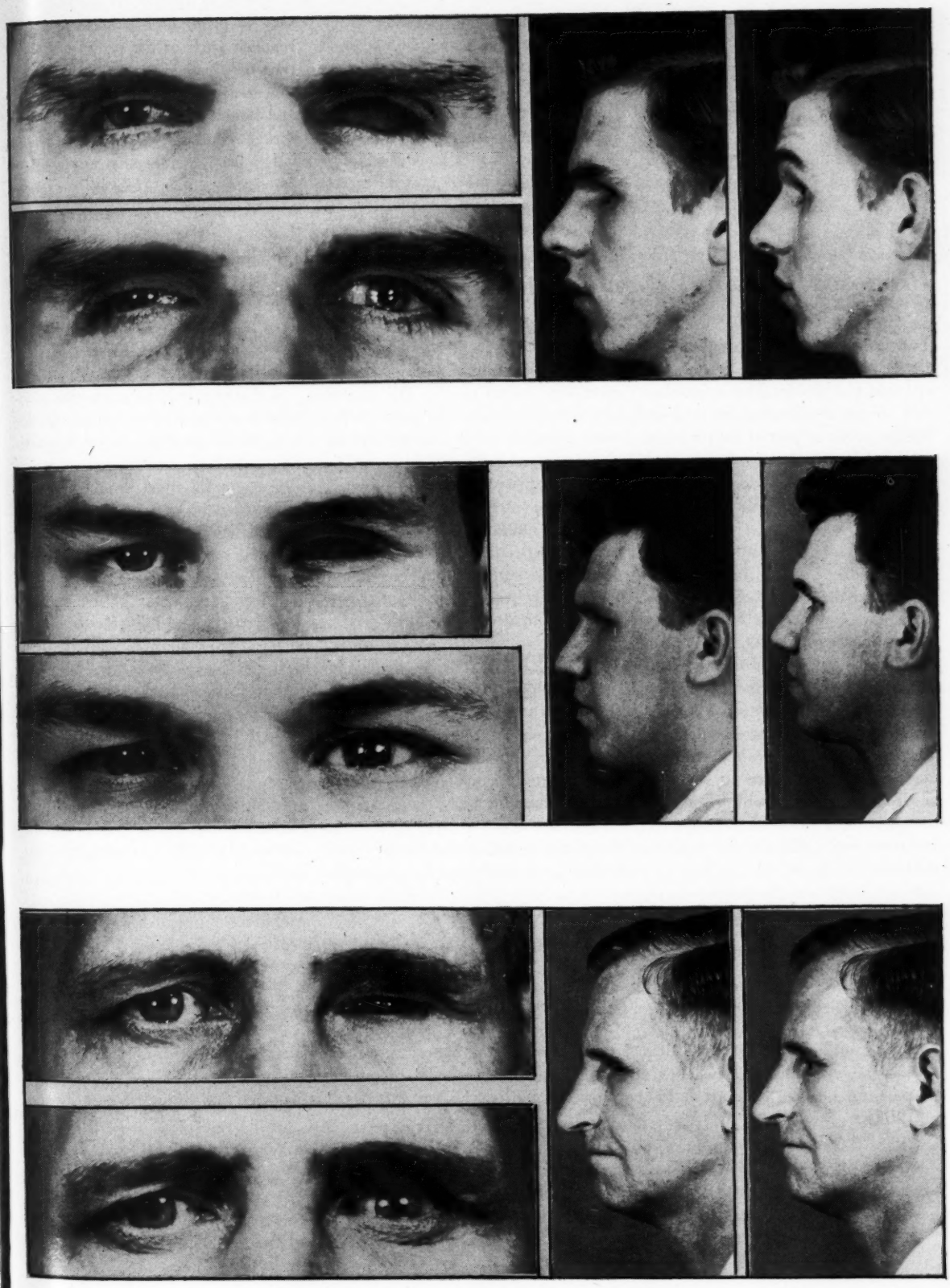


Fig. 20—Cases before and after receiving eye prostheses.

reflections in the natural eye. This important property of the acrylic material used should be utilized to create a replacement more desirable than previously employed prostheses (Fig. 16).

4. The completed prosthesis is lubricated with clear mineral oil and inserted into the eye socket (Figs. 17 and 18). The patient should wear the restoration for several hours, or overnight, before alterations are made because the muscles and tissues of the orbit will compensate and adjust themselves to a considerable extent. At that time it may be necessary to grind high surface areas or repolish parts of the prosthesis. This type of prosthesis has the advantage that such adjustments may be made, and that it may be repolished if eye socket secretions etch the surface or it has been accidentally scratched or damaged.

Proposed National Dental Service in Great Britain

THE INTERNATIONAL Committee on Dentistry was appointed by the government to consider how a satisfactory dental service can be provided for the public as part of the proposed National Health Service, how enough dentists can be secured, and how research in dental disease can be promoted.

Dental Conditions

The dental condition of the population was found to be bad and the effect on general health bad. On an average, 90 per cent of the men and 86 per cent of the women entering the army and auxiliary services have needed dental treatment on enlisting; 13.4 per cent of the men had artificial dentures, and a further 10 per cent needed them. Only about 1 per cent of workers at three large ordnance factories were dentally fit without dentures.

In Cambridge only 9.1 per cent of five-year-old children examined had naturally sound teeth. Of 10,000 Scottish five-year-olds, only 1,000 were found free from caries; and on the average, seven of each child's twenty teeth were carious or missing, about five of these being molars. Among 8,700 Scottish children, aged six to thirteen, the percentage of sound first permanent molars dropped steadily from 82 per cent at the age of six to 20 per cent at thirteen.

Recommendations

1. A comprehensive dental service should form an integral part of the national health service.

2. There should be regular inspection and treatment of any incipient dental defects.

3. This should be paid for not by the people as patients but by the community as a whole and be promptly available with a minimum of formalities.

4. There should be a general practitioner dental service broadly analogous to the proposed general practitioner medical service.

5. A special effort should be made to improve the teeth of expectant and nursing mothers, children, and adolescents.

6. There should be no compulsion for dentists to enter public service. Any dentist should be free to engage in it, either whole time or part time.

7. The proposals are not intended to interfere with the free right of everybody to seek his dental care through private arrangement.

—From Foreign Letters, London, *Journal of the American Medical Association*, 126:1162 (December 30) 1944.

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The Editor's Page

AMPHETAMINE, the drug popularly known as benzedrine, has been found by Burrill, Goetzl, and Ivy[1] to possess analgesic properties. In a study on thirty-four dental students, these investigators found by electrical determination that amphetamine has the power to raise the pain threshold. In doses of 15 milligrams, amphetamine is a more potent analgesic as tested by the method used than drugs of the aspirin group and even more potent than the opium derivatives, morphine and codeine.

It has long been known that amphetamine is a stimulant. It has been used in psychiatry for the treatment of depressive states. It has also been known as an agent to produce sleeplessness, and has been used in this way by students, automobile drivers who are required to spend long hours at the wheel, and by military personnel when wakefulness is required. It appears from the research that dextro-amphetamine, because its effectiveness does not disappear on repeated administration, may have a wider clinical application than the levo isomer. The dextro-amphetamine produces slight cerebral stimulation and wakefulness lasting from two and one-half hours to ten hours. Levo-amphetamine may be a mild depressant.

The investigators conducted an experiment in which they attempted to make objective recordings of the pain threshold by the use of carefully controlled electrical stimuli. Under such precise experimental conditions, it was noted that psychogenic factors played a part in raising the pain threshold and in determining the reaction to pain. This phenomenon is in accord with the observations made by Wolff and his associates.[2]

Burrill, Goetzl, and Ivy describe their experimentative procedure as follows:

"The experiments were carried out in the afternoon. Preadministration readings were taken at 1:30 and 2:00 p.m. The 1:30 readings were variable and were considered only as recalling to the subjects the intensity of sensation to be reached as the end point. The 2:00 o'clock readings were constant and were accepted as the true initial values. The drug used was administered orally at 2:00 p.m., and readings were taken thereafter every half hour for two hours. The results were recorded as actual voltages, and the mean of the differences of the four postadministration values from the initial or preadministration value was accepted as indicating the analgesic effect of the drug. To check the values obtained, *placebos* were substituted for the drugs at frequent intervals. The testing machine was so placed that the subject could not know the voltage applied to his tooth; and in carrying out the tests care was taken that no constant pattern of voltage changes was followed. The subject concentrated on holding the electrode against his tooth and on the resultant sensations. Each signalled vocally when the painful level of stimulus was reached. The subjects were faithful in reporting for the tests.

"During the course of the experiment, thirteen afternoons were devoted to making control determinations with placebos. It was found that in general the voltages of the pain thresholds tended to decrease during the afternoon in these determinations. This is reflected by a mean drop of 0.005 volts in the control determinations. In other words, as the afternoon passed, the subjects' pain sensitivity increased. However, if there was any marked disturbance in the routine of the subject's work in the dental clinic, such as difficulty in placing a foil filling or unusually good results in a dental operation, the threshold values increased and appeared to do so in proportion to the amount the subject was disturbed or elated. It was observed that running upstairs invariably raised the thresholds, as did any marked disturbance in the room where the tests were carried on. The changes in control values produced by these factors were not great in any case, but were sufficient to attract our attention."

The pain threshold-raising effects of amphetamine have been convincingly demonstrated in this experiment. The investigators have not, however, made suggestions for any therapeutic use of the drug as a preoperative agent.[3] They are now conducting clinical experiments which the profession will await with hopeful expectation. Although local anesthesia and analgesia by the inhalation of nitrous oxide and oxygen are valuable in clinical practice, conditions are frequently encountered in which neither injection nor the use of nitrous oxide is indicated. A preoperative drug that may be taken by mouth, that will allay fear and apprehension and raise the pain threshold, that has no depressant or severe stimulating action, should be a valuable adjunct to dental practice.

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[1]Burrill, D. Y.; Goetzl, F. R.; and Ivy, A. C.; The Pain Threshold-Raising Effects of Amphetamine, J. D. Research, **23**:337-344 (October) 1944.

[2]The Editor's Page, THE DENTAL DIGEST, **50**:464 (October) 1944.

[3]Letter to Editor from Doctor Burrill: "Some caution is indicated in the use of the amphetamines, as they are strong drugs. At this time any clinical use of the drug would be investigational, and we would not want to give the idea that we have a 'pain killer' for dental use."

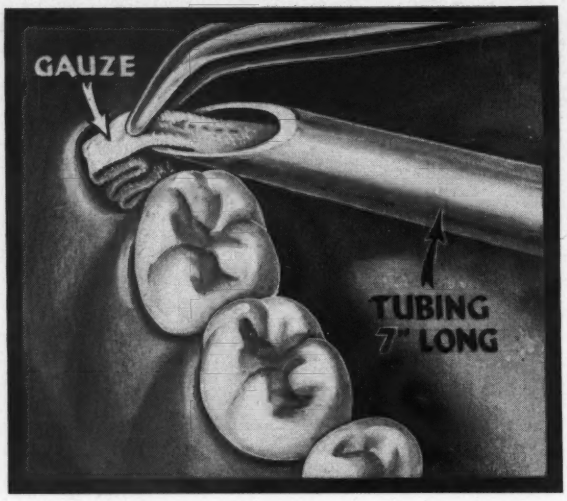

Fig. 1

An Instrument for Inserting Gauze into Inaccessible Sockets

Submitted by Russel R. Crane, D.D.S., Gilroy, California

Fig. 1—Bevel the end of a $\frac{5}{16}$-inch brass tube 7 inches long (a chrome-plated tube is preferred). Insert the necessary length of sterile gauze through the beveled end into the sterilized tube. Place the beveled end of the tube at the edge of the socket, and tease the gauze out of the tube and into the socket with sterile blunt-nosed pliers.

Inserting Small and Unwieldy Inlays

Submitted by Lieutenant E. M. Robbins (DC) USCG, Chelsea, Massachusetts*

Fig. 2—Place a drop of sticky wax on the end of a small stick (a match or swab stick), flame the wax, and attach it to the buccal or labial surface of the inlay. Apply the cement, insert the inlay, break off the stick, and clean away the wax.

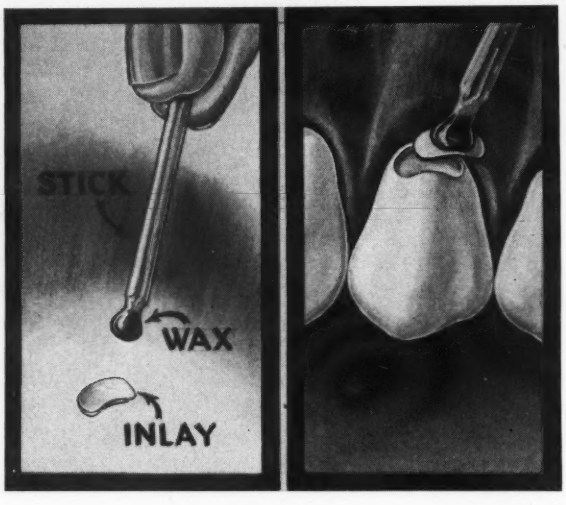

Fig. 2

A Gas Torch for Soldering Small Objects and Waxing Setups

Submitted by Thomas E. Power, D.M.D., Westfield, Massachusetts

Fig. 3—Solder the tip of a gas pilot light to the end of the nozzle of a chip blower. The small flame is ideal for soldering small objects and can be adjusted easily by means of the gas cock.

Removing Excess Amalgam from the Margins of a Restoration

Submitted by Alberto Brito Pérez, D.D.S., Havana, Cuba

Fig. 4—Before the amalgam hardens completely, place a finishing strip (hard grit) over the restoration, hold a burnisher firmly on the strip over the restoration, and pull the finishing strip back and forth over the restoration. This action wears down the excess amalgam at the margins of the restoration. A polishing strip with finer grit may then be used to obtain a smooth, polished surface.

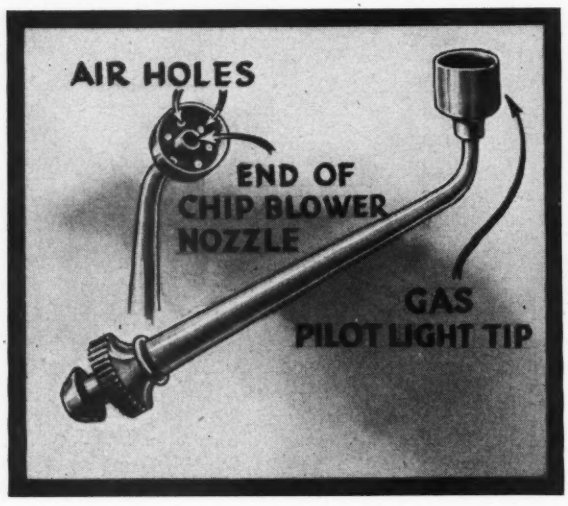

Fig. 3

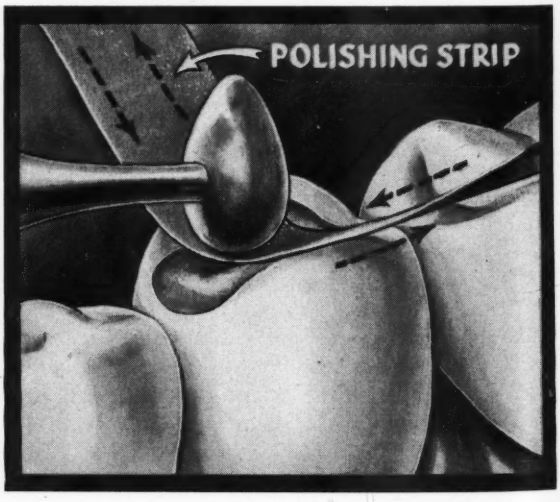

Fig. 4

PLEASE SUBMIT SUGGESTIONS TO THE EDITOR. SEE PAGE 82.

GGESTIONS . . . .

Holding the Interdental Papilla Away from a Proximal Cavity in an Anterior Tooth

Submitted by Captain William Ferderber (DC) USAAF, Sioux Falls, South Dakota

Fig. 5—Draw out a small piece of absorbent cotton until the center is thinner than the ends, and twist until it is compact. Introduce the narrowest part between the teeth, and insert it as far as it will go between the cavity and the papilla. Draw the cotton gently labially or lingually as far as it will go without resistance, and cut off the excess cotton to prevent contamination by saliva. The tissue is compressed away from the cavity, hemorrhage and seepage are prevented, and the cavity is more accessible to the operator.

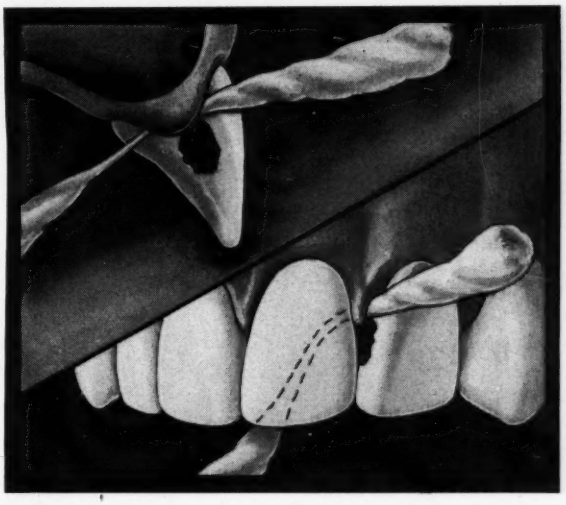

Fig. 5

Rebuilding a Pulpless Anterior Tooth

Submitted by Lieutenant (jg) Leonard H. Burg (DC) USNR, New Haven, Connecticut*

Fig. 6—After the root canal has been filled, grind the root face to just below the gingival line. Fit a Davis post into the canal so that it fits closely but does not bind when removed (A). The flange should be about 1 millimeter above the root surface. Adapt a celluloid crown form, fill it with white wax that has been well softened, and press it into position and chill (B). The post comes out when the wax crown is removed (C). Carve and contour. Invest as for any acrylic crown, process, and cement in place.

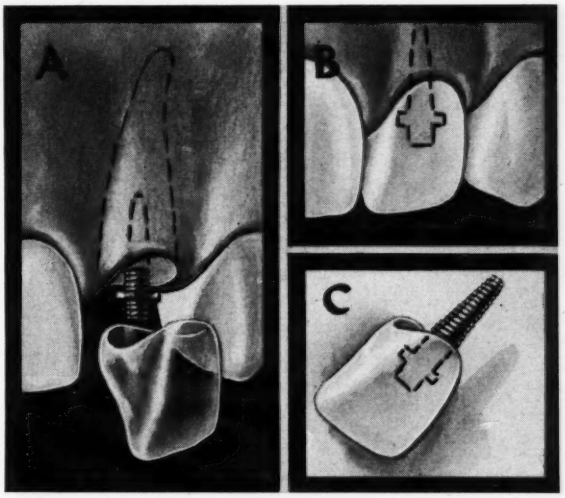

Fig. 6

Preventing Silver Nitrate Burns in the Mouth

Submitted by Lieutenant A. C. Maass (DC) AUS

Fig. 7—Before applying silver nitrate to a buccal or labial cavity preparation, place a cotton roll, which has been soaked in sodium chloride solution, between the tooth and the cheek. The sodium chloride will neutralize the effect of the silver nitrate on the delicate epithelial tissues of the mouth.

Keeping Gingival and Buccal Tissues Dry While Restoring Buccal Cavities

Submitted by Myrton J. Billings, D.D.S., Brooklyn

Fig. 8—Place a small piece of white blotting paper (instead of a cotton roll) over Stensen's duct to occlude the opening, thus keeping the area dry while molar restorations are being made.

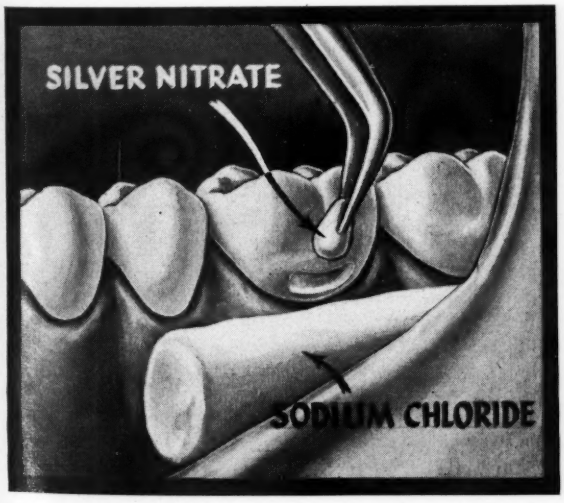

Fig. 7

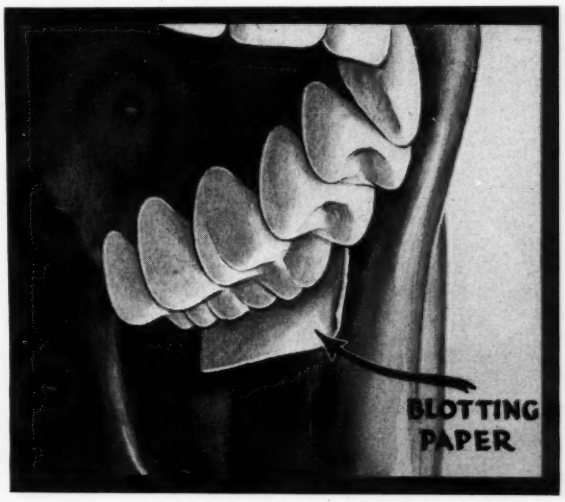

Fig. 8

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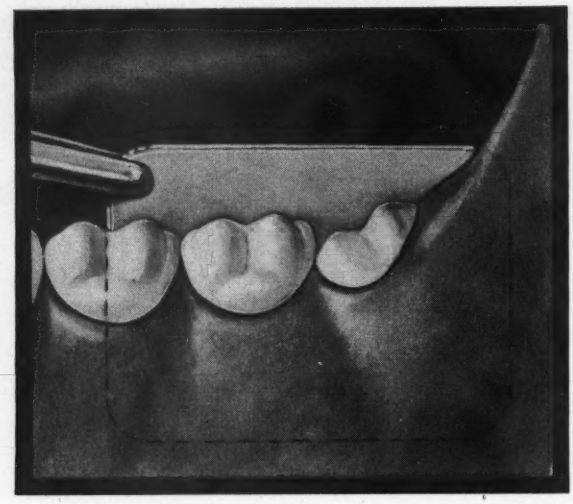

Fig. 9

Taking Roentgenograms of Lower Third Molars

Submitted by Lieutenant Commander Frank I. Gonzalez (DC) USN, Washington, D. C.*

Fig. 9—Clip the corner of the film packet in a hemostat, and slide the packet distally between the tongue and the mandible, suggesting to the patient that he relax. This technique prevents the usual gagging sensation, and results in better roentgenograms.

Placing Adjacent Amalgam Restorations Without Fusing

Submitted by Lieutenant (jg) Roland B. Herman (DC) USNR, Sampson, New York*

Fig. 10—Place one amalgam restoration in the usual manner with a matrix; carve and contour. Paint the entire proximal surface of this restoration with cavity varnish (liner) and allow to dry. Place the second amalgam restoration as usual. The cavity liner prevents the two restorations from fusing.

Determining the Length of a Root Canal

Submitted by Abraham H. Glick, D.D.S., Chillicothe, Ohio

Fig. 11—Place a ball of gutta percha on a broach, and insert the broach through the cavity and into the root canal as far as possible. Ease the gutta percha as far up the broach as possible. Remove the broach without disturbing the gutta percha ball. The depth of the canal can then be measured by comparing the length of the broach (to the gutta percha) with the canal pictured in the preoperative roentgenogram.

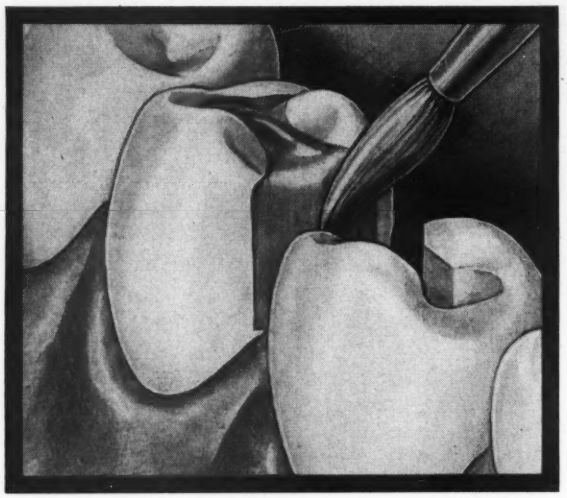

Fig. 10

Sharpening a Hypodermic Needle

Submitted by Commander James J. Dempsey (DC) USN, *U.S.S. Lexington*, San Francisco*

Fig. 12—If the bevel of the needle is not to be changed, stick the needle (A) through the cork (B) until the bevel of the needle is parallel to the bottom of the cork and extends a fraction beyond the cork. Stroke the cork back and forth across the hone (C) ten to fifteen times until the entire bevel is honed. If the bevel is to be changed, place the needle into the cork in a more vertical or horizontal position to get the desired bevel. It is seldom necessary to change the direction of the needle in the cork to get the proper bevel.

*The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

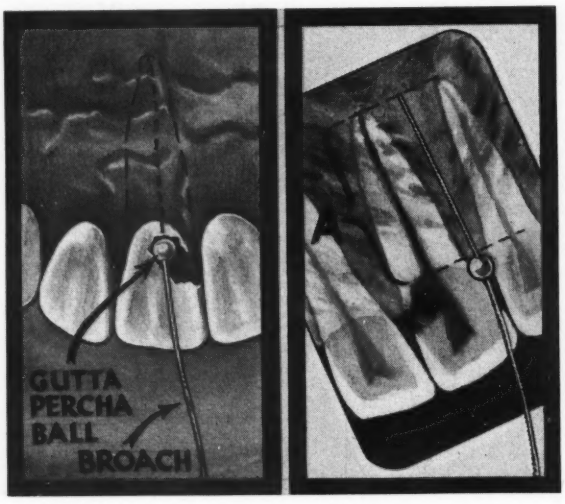

Fig. 11

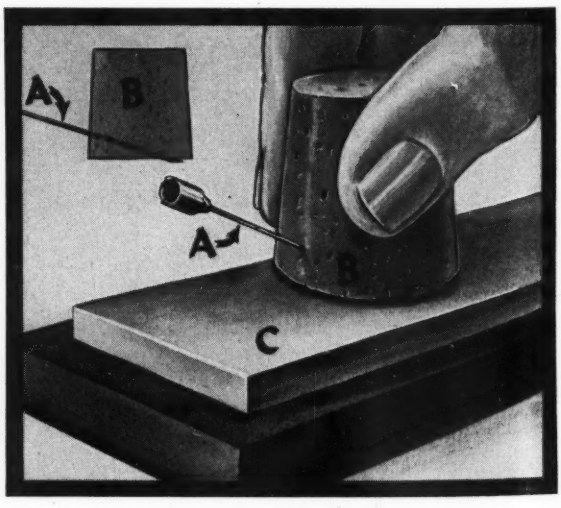

Fig. 12

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The Alkalinization of Mercury

ANCEL MEIGS BRADLEY, D.D.S., Muskogee, Oklahoma

The value of proper alkalinization of the mercury is emphasized in the mixing of amalgam for restorations. A procedure is suggested for the stabilization of this alkalinity.

MERCURY is the most unstable of all metals. The ratio between its weight and its volume is as variable as the difference in room temperatures. This variability is noticeable in amalgam which is mixed in proportions by volume. An amalgam mix made in proportions by weight approaches uniform accuracy.

Acidified Mercury

The common practice of clarification of mercury by washing in a solution of acetic acid produces mercury in which surface tension is increased (see illustration), and amalgamation is so retarded that the initial setting takes place before the amalgamation is well started. The subsequent stresses are evidenced by restorations that "crawl."

Alkalinized Mercury

The reverse is true in alkalinization: Surface tension is reduced (see illustration); an approach to complete amalgamation precedes the initial setting; and "crawling" of the restoration does not take place. *Reduction of surface tension is the key to better amalgam restorations.* Clinical use and observed results for almost a score of years have definitely proved this statement; but the problem of stabilization of the mercury at a definite degree of alkalinity has until recently balked the practicability of its general use. Absolute stabilization still remains an unsolved problem; however, the following procedure so nearly approaches it that its presentation to the profession is justified.

(1) *Plain mercury.* (2) *Acidified mercury. Note the increased surface tension.* (3) *Highly alkalinized mercury. Note the loss of surface tension.*

Procedure—1. Place 4 ounces of mercury in 4 ounces of 1 per cent sodium bicarbonate solution in an open dish. Stir the mercury into globules, and leave in solution for from sixteen to eighteen hours.

2. Remove the mercury from the solution, dry it, and place it in a bottle labelled "Alkalin Stock." Place this in storage for thirty days for what may be termed a "curing process." Apparently envelopment of the soda is a rapid process, but molecular union is slow. This makes alkalinization progressive for an indefinite period, which is a hazard in stabilization.

3. At the end of the curing period, remove the oxides with a dampened pledget of cotton, and establish the desired degree of alkalinity by mixing again with plain mercury. One part of alkalin stock by weight to four parts of plain mercury most closely meets the average requirements. Do not mix more than a month's supply at one time.

4. Medium-setting alloys are advised. Inasmuch as different alloys require different mercury ratios, test mixes are necessary to adjust the proportioning instrument. The ideal mix with alkalin mercury appears too dry when incorporated in the mortar; but when the temperature is raised by hand trituration, it assumes a smooth, putty texture that packs easily but does not raise free mercury to the surface.

Advantages—The advantages of alkalinization of the mercury used in restoration amalgam are as follows:

1. The amalgam is easier to pack.
2. It sets quicker.
3. It is denser.
4. The restoration takes a higher polish and retains it longer.
5. The restoration stays more securely in place.

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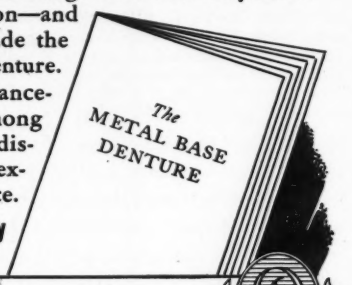
Really Superior Denture Service

Visualize what it would mean to you in terms of professional preferment to be able to provide a quality of denture service far beyond present-day standards in all of the attributes which make for both immediate and lasting patient-satisfaction.

You know of the physiological and sanitary advantages of the metal-base denture. You know that it has always been regarded by the profession as the *ne plus ultra* in denture construction with the sole exception of the difficulty of attaining satisfactory adaptation.

Now, through the development of modern precision casting processes and a fundamental departure from traditional practice in metal-base construction, these shortcomings have not only been overcome, but perfection of adaptation—and hence permanence of retention—made the *outstanding advantage* of this type of denture.

Learn more about this epochal advancement in denture construction. Be among the first to make it available to those discriminating patients who want and expect the highest type of denture service.



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KREX mixes and handles with great ease . . . sets quickly or slowly in the patient's mouth as the case requires and according to your own mix . . . reproduces accurate detail. Truly a superior product! Order a box of KREX today and begin making *perfect fitting* dentures.

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Impression
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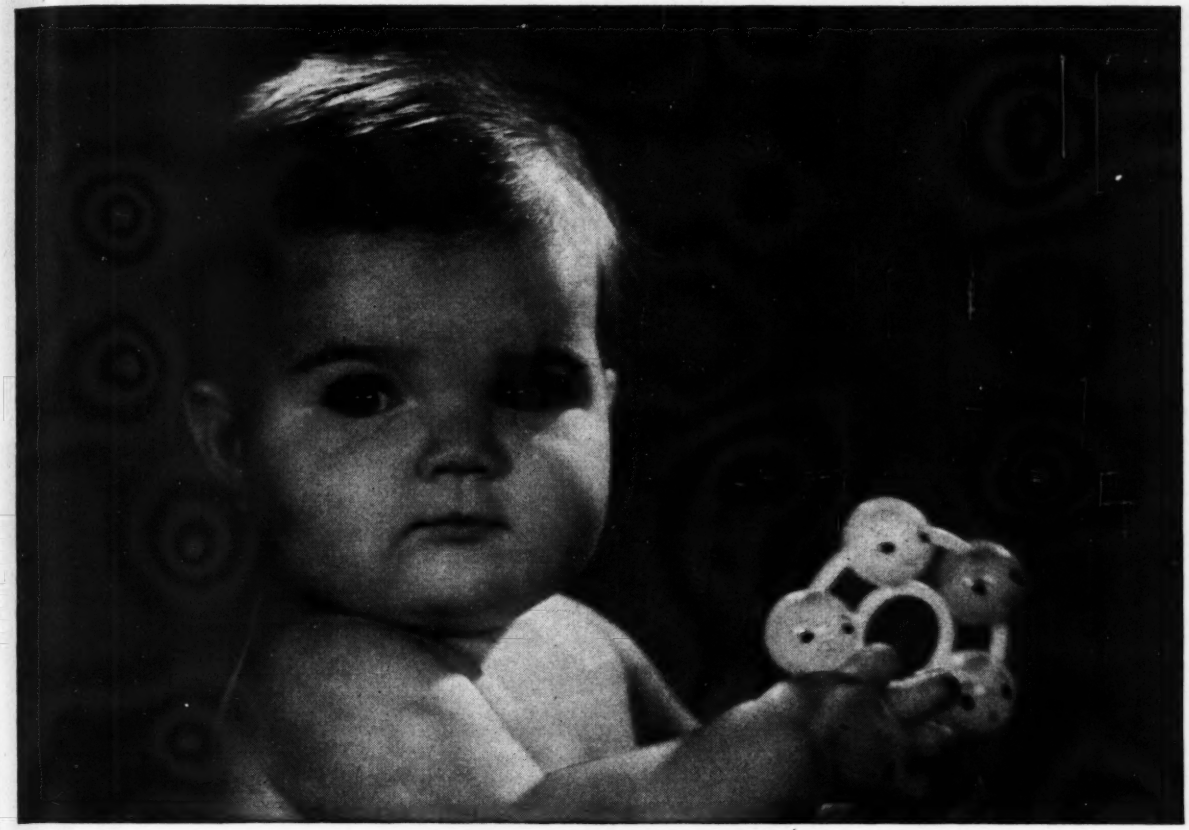
Contra-Angles

Who Gets the Toothbrush? . . .

During the first nine months of 1944, we are told by the War Production Board, 137,679,600 toothbrushes were shipped from factories. That is more than one brush for everyone in the United States. The toothbrush production in 1944 was 14 per cent higher than in the corresponding period in 1943. "Of the total shipments during the January-September period in 1944, 38 per cent went to the military post exchanges, ships' stores, Red Cross, and for export. In contrast, only 28 per cent of the shipments during the same period in 1943 were delivered to similar agencies."

About 12 per cent of the population of the country is in the armed forces. This 12 per cent receives about 38 per cent of the toothbrushes. That is a good sign. It should mean that these young people are being indoctrinated in oral hygiene. Some of them have seen and used a toothbrush for the first time in their lives. The lectures on oral hygiene by dental officers in the Army and Navy have done a great amount of good, but probably observing hygiene-in-action has done more good. When a young fellow in the Service sees other young men brushing their teeth, the monkey - see - monkey - do reaction comes to the fore. This mimicking and imitating of other people is a strong factor in developing hygienic habits among groups of people. These boys could be lectured to and harangued, but they would never be stimulated to action as effectively as they are when they see other people in their own age group brushing their teeth. In living together, as young men must in the military, they are inclined to pick up some good hygienic

(*Continued on page* 94)



WAR BOND MAN

—CLASS OF '63

Someday you'll want to see that boy, or girl, of yours off to college . . . and *right now* is not too early to start making plans.

Maybe your youngster, like so many other American boys, will work his way through school . . . but even in that case you'll want to be in a position to give him a little help if he needs it.

By what you put aside in War Bonds *today* you can help *make sure* he gets the same chance as other boys, *tomorrow*.

Chances are you're already on the Payroll Savings Plan. Saving as you've never been able to save before. This is fine not only for you, but for your country—*provided you keep on saving.*

But take your dollars out of the fight—and you will be hurting yourself, your boy's future, and your country.

Buy all the bonds you possibly can. Try to get even more than you ever have before. And remember this . . .

For every three dollars you invest today, you get *four dollars back when your Bonds come due.* You, and your boy, can use those extra dollars.

Make sure you get those Bonds! Hold on to them till they come due!

THE DENTAL DIGEST

★ *This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council* ★

habits. Toothbrushing is one of them. It is true, conversely, that some of the extremely conscientious practitioners of personal hygiene are thwarted in the military life because of the lack of privacy and individual toilet facilities. But I believe it is safe to say that in general more young people are taught and practice habits of good hygiene compared with the few who regress to lower hygienic levels.

"Good Teeth for Everybody" . . .

A splendid article appears in the February issue of the *Ladies' Home Journal*. There has been a great change in emphasis in recent years among magazines of general circulation with respect to dental subjects. It was not long ago when any article that appeared in the big magazines was likely to be either humorous or superficial in its recitation of dental facts. The modern beauty, health, and science editors in the important magazines are now making an effort to get the true story of dentistry. The article by the beauty editor of the *Journal* is an example.

This type of educational publicity is much more effective than any paid advertising campaign. An article appearing in a widely circulated magazine and written by a person who has no connection with dentistry is much more likely to be taken authoritatively by readers than an article in which there is some suspicion that it has been motivated by the self-interest of dentists.

GOOD TEETH FOR EVERYBODY is developed on the question-and-answer basis. It would be quite worthwhile if the *Ladies' Home Journal* were to put this excellent article out in the form of reprints for distribution by dentists to their patients. Here is the article reprinted:

Here are some questions that dentists hear over and over again, together with their up-to-date answers gathered from leading authorities.

Is there any safe way of bleaching the teeth?

No. Any product which claims to bleach the teeth should be looked at with suspicion. It is natural for teeth to vary in color from pale ivory to deep cream, and although they should be kept scrupulously clean, no attempt should be made to bleach them artificially.

Children are told "Candy is bad for your teeth." Is this so?

There are two dangers from candy. One is that if eaten frequently, it destroys the appetite for more necessary foods. The other is that when it is eaten between meals the teeth are not brushed afterward, but retain the sugars which favor the growth of bacteria. For this reason, the "lollipop habit" is a vicious one from the standpoint of dentistry, since the candy is kept in the mouth for indefinite periods. The ideal time for children to eat candy is directly after meals, when sweets form an acceptable supplement to basic foods, and when toothbrushing can follow. This satisfies the "sweet tooth" without threatening its health.

Is thumb-sucking a serious menace to the shape of the mouth?

While it is not a desirable habit, it is no longer looked on with horror. In fact, many modern authorities believe that the emotional damage done by using drastic means to break a child of this habit is worse than the possible gain. A habit which is really more dangerous, from the point of view of mouth and tooth formation, is that of leaning the jaw heavily on the arm and hand as children are inclined to do at school desks, pushing one side of the face out of line.

Is it true that misuse of a toothbrush is worse than disuse?

Few, if any, children will ever use a brush vigorously enough to do damage. A small brush can be used from two years of age on. Teeth and gums should be brushed at least twice a day, preferably after morning and evening meals. First, brush the grinding surfaces, then the inside, using a back-and-forth stroke. Brush outside surfaces last, using a circular sweep that includes gums as well as teeth. A dentifrice should clean thoroughly and may be

For your patients who also believe that
"NOTHING IS TOO GOOD FOR THE HUMAN MOUTH"
JELENKO
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THE RICHNESS OF PLATINUM IN PARTIALS AND BRIDGES OF SUPERLATIVE QUALITY
A notable rise in the use of "Albacast" indicates the reappearance of that elite class of patients who know and appreciate the superlative in dentures.
"Albacast" enables you to satisfy the discriminating taste as no other casting gold can. It has a luxurious platinum color; exceptional resistance to discoloration; lightness, combined with high strength and resiliency.
"Albacast" is not to be confused with low-priced white golds. It contains NO nickel. Its platinum color is derived solely from its high platinum content.
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Enjoying Professional Confidence for over 15 Years.
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136 West 52nd Street - New York 19, U.S.A.

mildly abrasive, but should never be gritty enough to injure the enamel.

We are advised to chew coarse foods. Which ones are best?

Raw fruits and vegetables, such as carrots, celery, hearts of cabbage, apples, and dry toast and bread crusts, are excellent for teeth and digestion. It does not, however, benefit your teeth to crack nuts or crunch hard candy, and may injure them seriously.

Is it true that lisping could be cured by corrective dentistry?

No such sweeping claim can be made, but it is undeniably true that many speech defects have been improved by oral surgery. A child whose first words indicate that he may have a speech problem should have a dental examination even more promptly than his brothers and sisters.

At what age should the straightening of teeth be started?

Work of this kind can be undertaken when a child is ten or eleven years old. If the child is too young, it is hard to get him to cooperate in the way that gives best results. There are, naturally, individual exceptions, and each case must be decided by the dentist in charge.

Why not pull out a decayed tooth instead of filling it, if the resulting cavity isn't going to show?

Because you not only lessen your chewing ability, but weaken your other teeth. For this reason your remaining teeth on either side of the cavity will tend to move over to help fill the gap. This means they no longer meet exactly with the teeth above (or below) them. This uneven meeting puts a strain on the teeth so that they will not last as long as they would under normal conditions. Always save a tooth, unless your dentist advises you to have it out.

Why is it necessary to go through an embarrassing period of toothlessness after teeth are pulled and before a plate is inserted?

As a matter of fact, it isn't necessary any more. The newest method is to fit the plate in place while the gums are still soft enough to adjust themselves absolutely to the shape of the plate. There need be no more discomfort than there is in adjusting the gums to the plates in the old way. A period of sensitivity is inevitable in either case, but the new thinking is that the sooner this transition state is over the better, psychologically as well as physically. There have been cases where the dentures were put in place within twenty-four hours of the final extractions! A long cry from the day when it was necessary to mumble toothlessly for a month or more. But then, all of dentistry is making such wonderful strides forward that there is less excuse all the time for losing one's natural equipment early in life, and none at all for letting it go unreplaced.

Fluorine . . .

There is an experiment now under way which is being watched with great hope by leading dental authorities. It should be followed even more eagerly by the millions of us whom it is intended to benefit. For if it works out as expected, it will mean better teeth for the whole nation tomorrow, better teeth for all our babies being born today.

This is not a remote laboratory experi-

(*Continued on page 96*)

The 4 Cardinal Points in Inlay Gold Selection

JELENKO Special INLAY CAST GOLD

TYPE A — SOFT
Simple Inlays

GOLD COLOR
per dwt. $2.00

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More Burnishable
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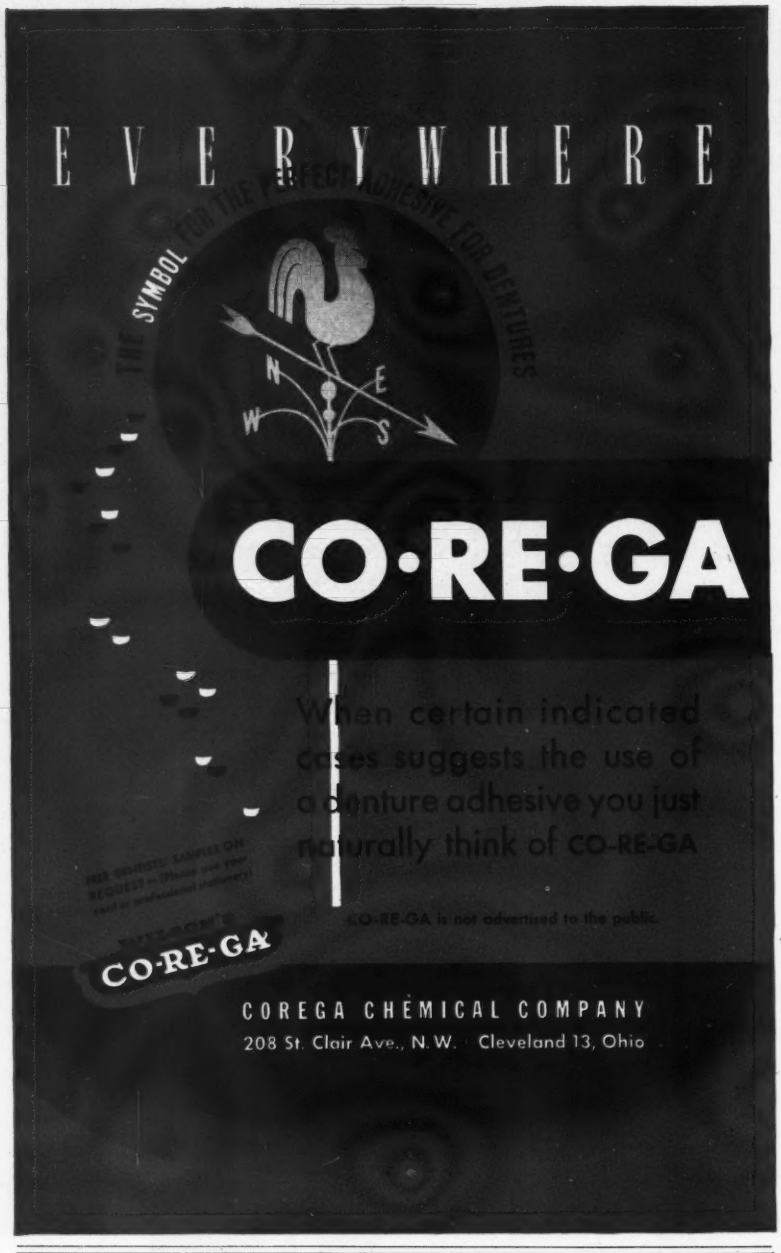
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A Texas Dentist has just written:

"Send another copy of VISUAL EDUCATION IN DENTISTRY. We have used our copy so much that it is worn out."

DO YOU NEED A REPLACEMENT COPY? PRICE IS STILL $1.00 TO REGULAR SUBSCRIBERS.

The Dental Digest
1005 Liberty Ave., Pittsburgh 22, Pa.

Here is $1.00. Please send copy of *Visual Education in Dentistry*. I am a subscriber.

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Address .....

City .....

Dealer .....

ment, but a practical test being conducted in Newburgh, New York. Into the drinking water of this town there is being introduced a very small, expertly controlled amount of a tasteless element called fluorine.

What does fluorine do? Well, it is by way of being a dental miracle worker, for it is now an established fact that in communities where it is a natural ingredient in the drinking water the citizenry have markedly strong teeth. A school survey in five communities near Chicago showed, for instance, that the children who were lucky enough to have fluorine in their regular drinking water had only about one third as much tooth trouble as the others! If the fluorine content is high, the teeth may become mottled as well as strong; but when the percentage of fluorine is held down to one part per million parts of water, the teeth develop resistance to decay with less likelihood of mottling. Even if the spots do appear it is not serious, as they can be removed.

For the next ten years all school children between the ages of five and twelve in Newburgh will have an annual dental checkup under the direction of the New York State Health Department. For purposes of comparison, the school children of Kingston, New York, a similar community not undergoing the fluorine experiment, will also be examined.

If this wonder-working chemical accomplishes what forward-looking dentists believe it will, based on their preliminary experiments, it will be a simple matter to extend the Newburgh program across the nation. When that happy day comes, a health treatment for your teeth will be no more difficult, literally, than drinking a glass of water!

In the meantime, while we are awaiting the outcome of this test, we can't let the American dental situation slip from bad to worse, as it has certainly been doing. You have probably heard the dismaying fact that 23 per cent of the first men called up by the draft were rejected on teeth alone. But did you also realize this high figure was in spite of the fact that *all those men were required to have, to get by, were twelve teeth that met?*

You Can't Blame Your Ancestors for Your Teeth

With the exception of that very immediate ancestor, your mother, you can't blame poor teeth on your forbears. Your teeth are not a family heritage, like a Roman nose or red hair. They are made to order just for you, beginning with that moment six months before your birth when the first jellylike bodies are formed in embryo gums. Whether they develop properly depends on whether they get a sufficient supply of calcium and phosphorus; in other words, on whether your mother-to-be is eating and assimilating properly. Starting with that important prenatal period, here is a summary of the program urged by doctors and dentists for the production, and preservation, of sound teeth:

Prenatal Tooth Care—The diet and general health of an expectant mother have a direct effect on her baby's teeth. If she skimps on the necessary food elements, she is not only handicapping her child, but laying up trouble for herself. This results from the fact that Nature, who is always more interested in the coming generation than the present one, will

(*Continued on page* 98)

. . FOR BEST RESULTS WITH
STEELE'S NEW HUE FACINGS
WE RECOMMEND . . .
Do not grind the incisal shoulder of the facing or backing. Use STEELE'S NEW HUE BACKINGS. Solder or cast to these backings. They are precious metal and fuse at 2300 F. Follow the technique prescribed for cementation. Carefully adjust and balance the bite.
use Steele's NEW HUE FACINGS
for all anterior restorations

ruthlessly draw on every available element she needs for tooth building and will deprive the mother of calcium to help her baby, if there is not enough for both. This explains why so many women have unusual dental difficulties during and after pregnancy. It is important that the intake be sufficient to protect both mother and baby. Here are facts to remember:

Milk is a *must* in the diet: preferably a quart a day, because *there is nothing quite so good for building teeth.*

In addition, fresh fruits and vegetables, potatoes, whole-grain or enriched cereals and bread, fish, poultry or meat, eggs, butter or enriched oleomargarine are needed.

But even this ample diet may need to be supplemented by cod-liver oil, containing vitamin D, which enables the teeth to absorb calcium and phosphorus more freely. Your doctor will decide about this, and also about the desirability of calcium tablets, which are excellent in some cases but are not a universal necessity. Don't prescribe for yourself. Ask your physician what you need.

Have your own teeth checked as soon as you know you are pregnant. It is particularly important at this time that you have teeth capable of chewing your food properly. Furthermore, diseased teeth affect your general health, and therefore the well-being of your baby. There is no reason at all to be afraid of having your dental work done during pregnancy because of possible nervous strain. Modern dentistry takes your condition into consideration and has found ways to minimize or eliminate pain that might shock the system.

A Child's First Trip to the Dentist—Once a child has arrived in this world and is equipped with his first teeth, how soon should he be taken to the dentist? Should mother wait until a wail announces a toothache?

"Emphatically, no!" say modern dentists. A child's first visit to the dental chair affects his lifetime attitude about the care of his teeth. If he is dragged screaming to an office where his original pain is further aggravated, to his way of thinking, by a white-coated gentleman who starts prodding around in his sensitive mouth, he may well acquire a permanent loathing of everything connected with tooth repair.

The wise mother doesn't wait until the child is in distress, but takes him with her on one of her own periodical checkups, when he is between two and three years old. This gives the dentist a chance to make friends with the child under pleasant circumstances. His office becomes an interesting place to visit and he himself appears as a kindly person instead of a fearsome ogre.

The Importance of Baby Teeth—Too many mothers still accept the mistaken notion that first teeth don't require any particular attention. "Since they fall out, anyway, why spend money on them?"

That unfortunate idea is to blame for many a toothache and unhealthy mouth, and even, in some cases, for badly placed second teeth. There are very important reasons for preserving baby teeth, as follows:

First, a small child needs teeth to chew his food properly. If his first teeth are allowed to crumble before his second teeth come in, there may be a period of one or two years when it is actually impossible for him to masticate properly. Food is swallowed half chewed. Bad digestion results. And all this at an age when his growing body needs to get the most nourishment possible from a variety of substantial foods, and his jaws need to be strengthened and developed through the exercise of honest chewing.

This development of the jaw, and preservation of the first teeth, also helps to guide the permanent teeth into position.

Finally, decaying teeth are as offensive in young mouths as older ones. The helpless child whose mouth is not clean, and whose system is filling up with poison draining from his teeth, is entitled to be irritable. It is a pity he cannot lay the blame for his bad behavior on his parents, where it belongs.

There is every reason for examining baby teeth and having all cavities filled promptly.

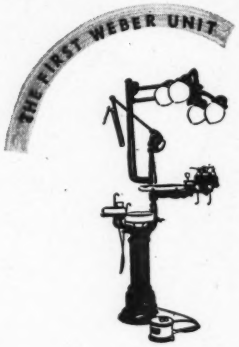
What Next?—If a child's first teeth are well cared for and a happy relationship with his dentist is established, and dental rule for the rest of his life is simple: *Periodic checkups and obedience to the dentist's instruction.* Twice-a-year inspections are enough except in cases of "problem teeth," or after severe illness. Teeth, like hair, are a health barometer, and suffer during disease. Any routine that keeps the body in top form makes for tooth strength too. For that reason, dentists today check patients' diet and health habits along with their mouths, and are likely to prescribe foods as well as fillings. Your teeth are willing to work for you far longer if you will give them the right kind of food to work *on* and *with.*

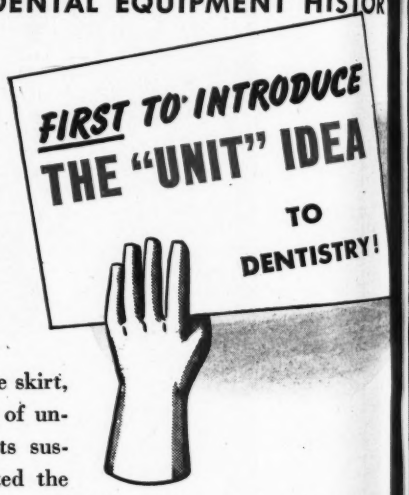
Sucker for a Catalogue . . .

I am a sucker for any kind of catalogue. The mail order houses send out big books that make my mouth water. The hog cholera medicines and the windmill ads give me a particular form of nostalgia. The ones from the seed and nursery men with their bright wares disturb my day's work.

I do a lot of planting while sitting

FAMOUS WEBER "FIRSTS" IN DENTAL EQUIPMENT HISTORY





Back in the days of the hobble skirt, dental offices with their array of unsightly operating accoutrements suspended from the wall, presented the appearance of the hanging gardens of Babylon. It was during this era that Weber introduced a revolutionary new idea to dentistry . . . an idea which was the fore-runner of today's modern Operating Unit.

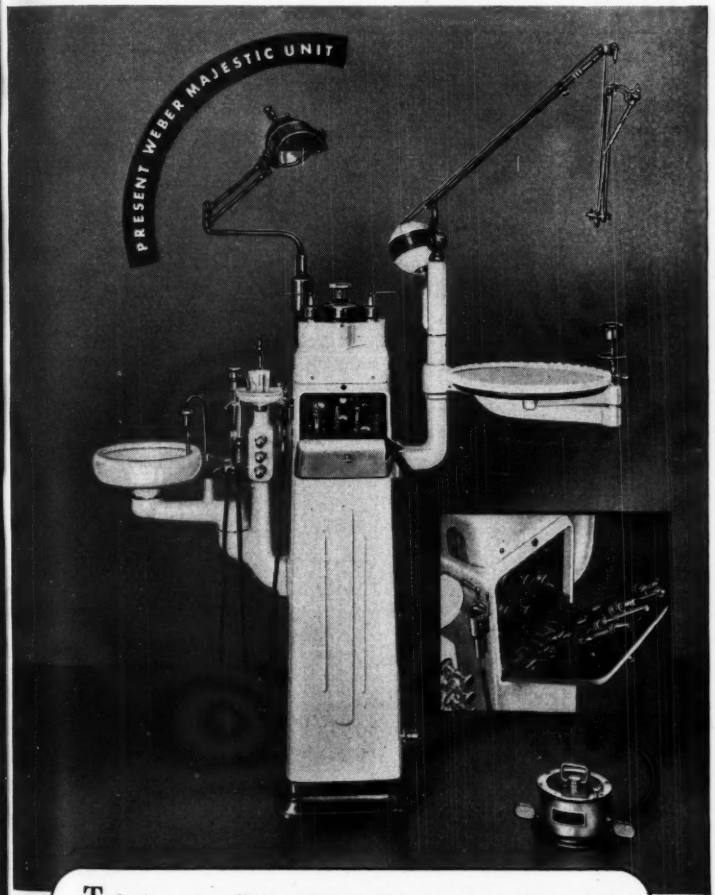
Henry Weber's efforts to establish new standards of operating efficiency and styling in dental offices were crowned with success in the early days of the present century with the introduction of the Model "A" Unit—the first of its kind in dental history to group all operating essentials together in *one* compact assembly beside the chair. Thus, thirty odd years ago another famous Weber "First" was born.

WEBER Dental Manufacturing Co.
CANTON 5, OHIO, U.S.A.

before the fire in the winter. When spring comes and the earth is clean and soft to be worked, I do not get quite as much done as I had contemplated comfortably before the winter's fire. I am a gardener and a farmer who is always looking for magic. One time I bought a fancy cage-like apparatus called a "battery" to be used for chicken-raising. The idea in the contraption was to keep the chickens immobile and well fed so that they would have nothing in life to do except stuff themselves and let the eggs roll down the chute. In this arrangement they eat all sorts of fancy mash that costs more than the eggs are worth. After a time I felt sorry for the plump chickens sitting and eating and letting eggs roll out of them. I threw the "battery" away and let the hens free to roam and dig for worms and carry on their private lives.

Now I fear I am to begin another experiment. A catalogue just came in that promises great things in organic gardening. The fellow who wrote this copy has used a scare appeal. He says that chemical fertilizers do all sorts of awful things to the soil, the plants, and the people who eat the foods. If you follow his method you can take the odds and ends around the farm or yard and by his system

(*Continued on page* 100)



Today's modern Weber Majestic Unit is truly the "Royalty" of all Unit Equipment both in appearance and utility. One feature which makes it outstanding is the built-in Instrument and Control Panel (see insert) which places all Low-Voltage Instruments and all Controls for Air and Electrical Instruments within easy reach and fully protected against dust and dirt when panel door is closed. Model "F" (shown above) for installation at left of chair. Model "G" for split unit installation.

A limited quantity of this "Better-Than-Ever" Weber Equipment is available under the new W.P.B. Modification Order. Maybe you are in the preferred group. Ask your Weber Dealer or write us for particulars.

Why not give him your magazine subscriptions?

This dentist won't quit! He is bravely carrying on by selling magazine subscriptions, because he can no longer practice. Only 39, he is the victim of multiple sclerosis. But *he won't quit trying* to support his wife and little son.

At no cost to yourself, you can help him

You can send him your orders now, at publishers' rates:

The Reader's Digest: $3 yearly; $5 for 2 years; gifts for service men, $1.50 yearly.

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Life: $4.50 yearly; gifts for service men, $3.50 yearly.

Fortune: $10 yearly; gifts for service men, $6 yearly.

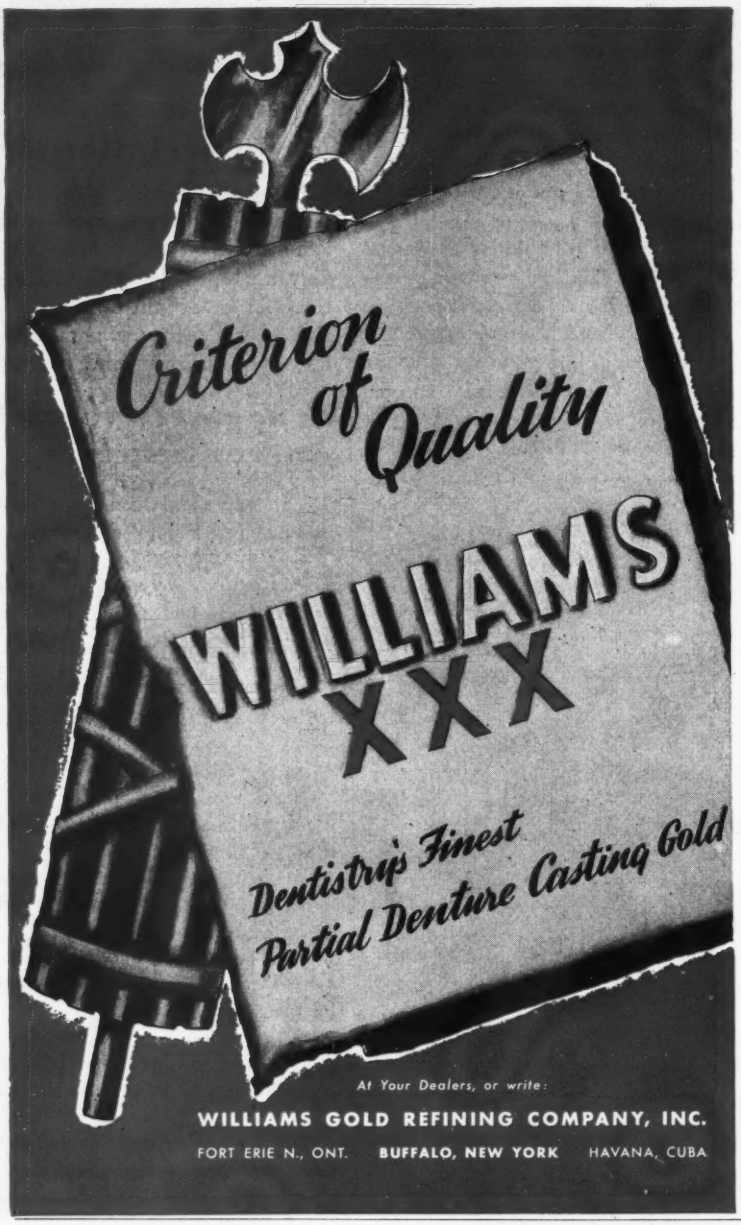
Newsweek: $5 yearly; gifts for service men, $3.50 yearly.

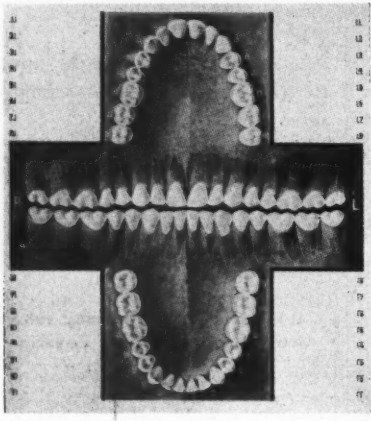
You may also include subscriptions for any other magazines—*Cosmopolitan* or *Good Housekeeping* for example.

Please make your checks payable to the magazines themselves but send to

Russell Panzica, D.D.S.
717 Seventh St.
Buffalo 13, N. Y.

(A penny postal will bring subscription prices on other magazines.)





Permanent Records Are Important . . .

Do you have a permanent record of the mouth of each of your patients? This type of record is tremendously important, and easy to accomplish. Use the Ryan Treatment and Examination Chart as illustrated here. It is being widely used and is acclaimed the most practical chart for record purposes. Use it on *one case* . . . and you will want to use it on *every* case. The coupon is for your convenience.

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of organic farming you can make yourself some fertilizer that will pop the seeds right out of the ground. JACK AND THE BEAN STALK has nothing on this guy. If you eat the products grown by his method of organic gardening, your health will develop to superb dimensions. Here is a neat little paragraph from his catalogue:

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Being a sucker for these catalogues, I have sent in my money to find out about this magic formula of raising crops that will do away with all these horrible diseases. I have visions of putting this experiment to work and retiring to the shade to sit and watch the plants leap from the ground with their fruits and products dripping with vitamins and full of health-giving chemicals.—E. J. R.

DENTAL MEETING *Dates*

California State Board of Dental Examiners, regular meeting, February 26, San Francisco, College of Dentistry, University of California; in Los Angeles June 4, and in San Francisco at Physicians & Surgeons College of Dentistry on August 6. For information, write to Doctor Kenneth I. Nesbitt, 515 Van Ness Avenue, San Francisco.

•

Annual March Meeting of the Cincinnati Dental Society, Hotel Netherland Plaza, Cincinnati, March 18-20.

•

The Thomas P. Hinman Midwinter Clinic, Municipal Auditorium, Atlanta, Georgia, March 25-27.

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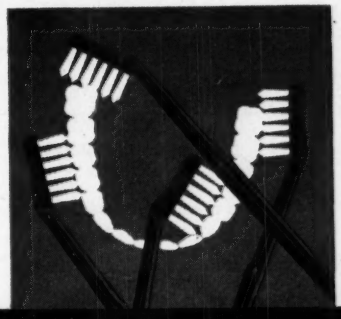

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Altered Taste in Dengue

CAPTAIN STEPHEN R. ELEK (MC) AUS

IN ORDER to obtain more detailed and precise information about altered taste in dengue, the following study was instituted. Soldier patients were studied in a well known endemic area in New Guinea where the established vector for this disease, Aedes aegypti, has been found by Army survey units of trained entomologists.

Symptoms

1. Sudden onset of fever or chills, or both.
2. Severe headache, backache, and eyeache, with more or less generalized aches and pains in the muscles and joints.
3. Reduction or loss of appetite.
4. Rash (31 per cent of patients).
5. Leukopenia.
6. A benign course.
7. Average white blood cell count of 3500; lowest, 2350.
8. Temperatures ranging from 100° F. to 103° F. with peaks of 104° F.
9. Abdominal cramps, diarrhea or constipation, photophobia, reddening of the eyes, a flushed facies, and not infrequently postfebrile malaise.

Types of Altered Taste

The patients were interrogated carefully with regard to an altered taste both before and during hospitalization. Only those patients were selected for the study who did not have any perverted taste due to other causes, such as excessive smoking, prior to the onset of dengue. For purposes of comparison and also for the less articulate patients, altered taste was divided into four classes:

1. Bitter (like atabrine or quinine).
2. Sour (like grapefruit, vinegar, or partly dissolved aspirin).
3. Sweet (like candy or jam).
4. Miscellaneous (foul, "rotten egg," slimy, "brown," or rusty).

In order to ascertain whether this phenomenon was an early or a late manifestation of dengue and thereby further to appraise its diagnostic significance, it was correlated with the duration of the illness in 131 men with altered taste. The study showed that altered taste appeared *within a day* after the symptoms in approximately 73 per cent of the men. It is noteworthy that in 14 per cent (17 men) it occurred as early as two to twelve hours after the onset of symptoms, thereby demonstrating that it is an early manifestation of dengue and hence diagnostically important.

Table 1—Incidence of Types of Altered Taste.

Taste	Patients	
	Number	Per Cent
Bitter	84	63
Sour	32	24
Sweet	6	5
Miscellaneous	11	8

Altered taste was also studied in

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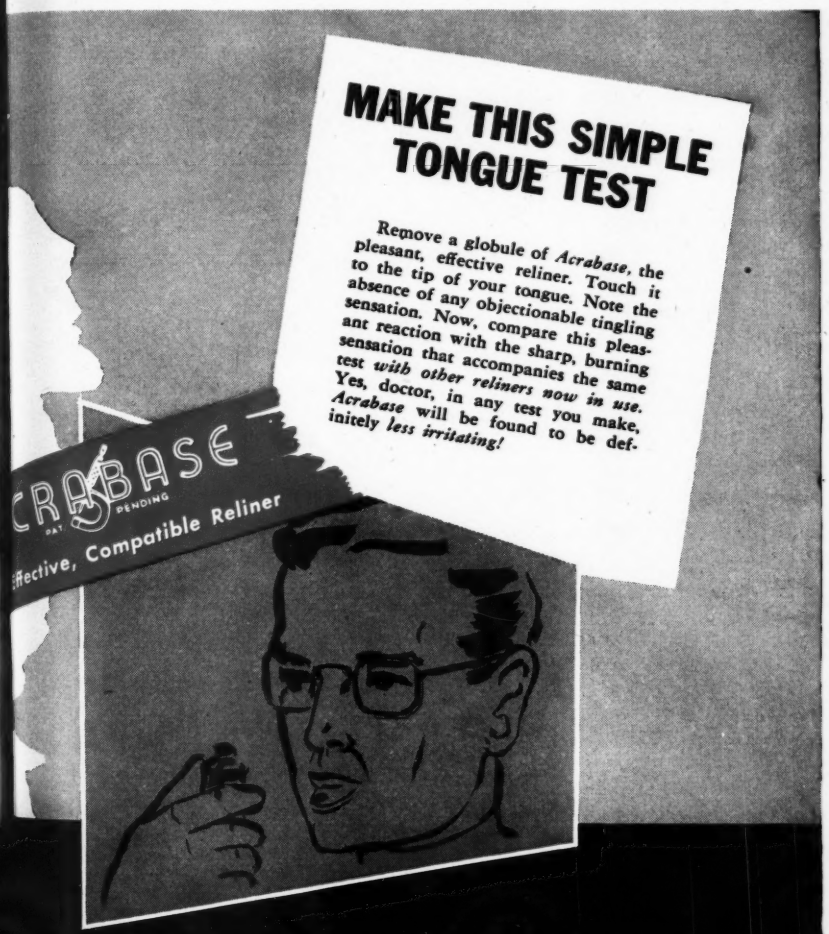
Table 2—Duration of Altered Taste.

Taste	Days Average	Range
Bitter	3.6	1-9
Sour	3	1-5
Sweet	3	1-5
Miscellaneous	3	1-7

malaria (76 patients) where it is neither a common nor an early symptom as compared with dengue. In military hospitals in combat zones where facilities for examination of malaria smears are not immediately, or at all, available, inquiry into the history helps to differentiate dengue fever from malaria. The presence of altered taste points to dengue. Also the presence or absence of this symptom aids in distinguishing the closely similar sandfly fever from dengue.

—From *War Medicine*, 6:392 (December) 1944.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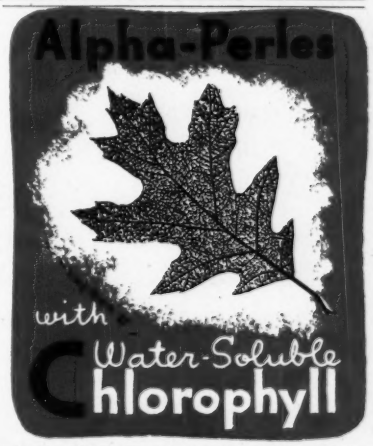

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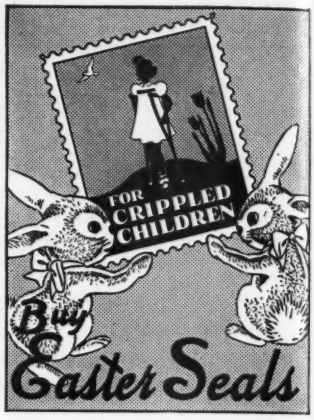

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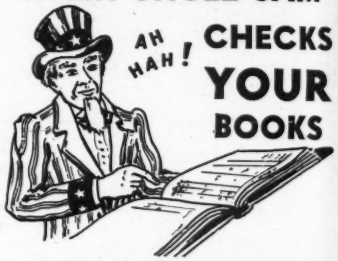

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